

# CAPITAL PROFILE REPORT

PROFILE NAME: <b>HIGH SOLIDS ANAEROBIC DIGESTION FACILITY</b>	<b>FUNDED</b>
PROFILE NUMBER: <b>13-33-2023</b>	<b>PROFILE STAGE: Approved</b>
DEPARTMENT: <b>Integrated Infrastructure Services</b>	<b>PROFILE TYPE: Standalone</b>
LEAD BRANCH: <b>Infrastructure Delivery</b>	LEAD MANAGER: <b>Jason Meliefste</b>
PROGRAM NAME:	PARTNER MANAGER: <b>Michael Labrecque</b>
PARTNER: <b>Waste Management Services</b>	ESTIMATED START: <b>January, 2013</b>
BUDGET CYCLE: <b>2012-2014</b>	ESTIMATED COMPLETION: <b>December, 2021</b>

<b>Service Category: Utilities</b>	<b>Major Initiative:</b>
------------------------------------	--------------------------

<b>GROWTH</b>	<b>RENEWAL</b>	<b>PREVIOUSLY APPROVED:</b>	<b>42,237</b>
<b>100</b>		<b>BUDGET REQUEST:</b>	<b>-</b>
		<b>TOTAL PROFILE BUDGET:</b>	<b>42,237</b>

## 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 lead 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

## 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	2021	2022	2023	2024	2025	2026	2027	2028	2029	Beyond 2029	Total	
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	
	2013 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2013 CBS Budget Adjustment	30,828	-	-	-	-	-	-	-	-	-	30,828	
	2014 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2015 Cap Capital Budget Adj (one-off)	6,166	-	-	-	-	-	-	-	-	-	6,166	
	2015 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2016 Cap Capital Budget Adj (one-off)	-	-	-	-	-	-	-	-	-	-	-	
	2016 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2017 Cap Capital Budget Adj (one-off)	1,983	-	-	-	-	-	-	-	-	-	1,983	
	2017 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2018 Cap Council	2,730	-	-	-	-	-	-	-	-	-	2,730	
	2018 Cap Capital Budget Adj (one-off)	-	-	-	-	-	-	-	-	-	-	-	
	2018 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2019 Cap Carry Forward	-	-	-	-	-	-	-	-	-	-	-	
	2020 Cap Carry Forward	-49	49	-	-	-	-	-	-	-	-	-	
	2021 Cap Council	-	530	-	-	-	-	-	-	-	-	530	
	<b>Current Approved Budget</b>	<b>41,658</b>	<b>579</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>42,237</b>
	Approved Funding Sources												
	Partnership Funding	9,098	1,745	-	-	-	-	-	-	-	-	-	10,843
	Self-Liquidating Debentures	30,864	530	-	-	-	-	-	-	-	-	-	31,394
Waste Mgt Retained Earnings	1,696	-1,696	-	-	-	-	-	-	-	-	-	-	
<b>Current Approved Funding Sources</b>	<b>41,658</b>	<b>579</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>42,237</b>	

BUDGET REQUEST	Budget Request	-	-589	589	-	-	-	-	-	-	-	-
	Revised Funding Sources (if approved)											
	Partnership Funding	-	-1,000	1,000	-	-	-	-	-	-	-	-
	Self-Liquidating Debentures	-	-530	530	-	-	-	-	-	-	-	-
	Waste Mgt Retained Earnings	-	941	-941	-	-	-	-	-	-	-	-
<b>Requested Funding Source</b>	<b>-</b>	<b>-589</b>	<b>589</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	41,658	-10	589	-	-	-	-	-	-	-	42,237
	Requested Funding Source											
	Partnership Funding	9,098	745	1,000	-	-	-	-	-	-	-	10,843
	Self-Liquidating Debentures	30,864	-	530	-	-	-	-	-	-	-	31,394
	Waste Mgt Retained Earnings	1,696	-755	-941	-	-	-	-	-	-	-	-
<b>Requested Funding Source</b>	<b>41,658</b>	<b>-10</b>	<b>589</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>42,237</b>

## CAPITAL BUDGET BY ACTIVITY TYPE (000's)

	Activity Type	Prior Years	2021	2022	2023	2024	2025	2026	2027	2028	2029	Beyond 2029	Total
REVISED BUDGET (IF APPROVED)	Construction	-49	-10	589	-	-	-	-	-	-	-	-	530
	Other Costs	41,707	-	-	-	-	-	-	-	-	-	-	41,707
	<b>Total</b>	<b>41,658</b>	<b>-10</b>	<b>589</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>42,237</b>

## OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:												
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
<b>Total Operating Impact</b>	-	-	-	-	-	-	-	-	-	-	-	-