

# CAPITAL PROFILE REPORT

PROFILE NAME: **ELECTRIC BUSES - ZEB PROGRAM**  
 PROFILE NUMBER: **21-61-3621**  
 DEPARTMENT: **City Operations**  
 LEAD BRANCH: **Edmonton Transit Service**  
 PROGRAM NAME:  
 PARTNER:  
 BUDGET CYCLE: **2019-2022**

**UNFUNDED**

PROFILE STAGE:	Entry - Create Profile
PROFILE TYPE:	Standalone
LEAD MANAGER:	Carrie Hotton-MacDonald
PARTNER MANAGER:	
ESTIMATED START:	May, 2021
ESTIMATED COMPLETION:	December, 2022

Service Category:	Public Transit	Major Initiative:	
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<b>GROWTH</b>	<b>RENEWAL</b>	PREVIOUSLY APPROVED:	-
	100	BUDGET REQUEST:	27,000
		TOTAL PROFILE BUDGET:	27,000

## PROFILE DESCRIPTION

Purchase an additional 20 battery-powered electric buses as replacements for 20 diesel buses in Edmonton Transit's fleet. The additional electric buses will be purchased utilizing a combination of funding allocated for Bus Fleet & Equipment Rehabilitation & Replacement (CM-66-3600), and a loan from the CIB (Canada Infrastructure Bank) allowable under the ZEB (Zero Emission Bus) Federal Program. 20 electric buses can be purchased at a projected unit cost of \$1.35M per bus.

## PROFILE BACKGROUND

Electric buses contribute to the City of Edmonton's shift toward more sustainable transportation, a lower carbon footprint, and a high-quality transit service for Edmontonians. Electric buses produce near zero tailpipe emissions, are much quieter, and require less ongoing maintenance compared to current diesel buses. ETS has already purchased 40 electric buses that were all in service in Q4 2020. The addition of 20 electric buses will bring the electric fleet total to 60, one of the largest electric fleets in Canada.

## PROFILE JUSTIFICATION

The cost for a zero-emission bus (ZEB) is significantly higher than a diesel bus. To assist in the funding gap and accelerate the deployment of ZEBs, the Canada Infrastructure Bank (CIB) has launched a program to finance a portion of the cost of acquisition of ZEBs across Canada. Essentially, the CIB will provide the City of Edmonton a loan to finance the additional cost of purchasing an electric over a diesel bus. The financing is repayable only from operational cost savings of electric vs diesel buses over the term of the financing, which would be 12 years based on the expected lifespan of the ZEBs in Edmonton.

## STRATEGIC ALIGNMENT

Electric bus technology supports the corporate outcome: "The City of Edmonton's operations are environmentally sustainable by reducing greenhouse gas emissions produced by city operations". It aligns with the City of Edmonton's Change for Climate initiative and the committed reduction to greenhouse gas emissions. Significant emissions reductions (CO2 equivalents) will be realized.

## ALTERNATIVES CONSIDERED

A purchase of 20 diesel buses (CM-66-3600); NOT RECOMMENDED

## COST BENEFITS

Life-cycle cost comparison was undertaken to determine the economic impact of shifting from diesel buses to electric buses. For the scenario selected (40 buses), lifecycle costs were comparable to the electric bus option (higher initial investment offset by on-going maintenance and fuel/power savings). Significant emissions reductions (CO2 equivalents) can be realized (up to 44% with present power generation; up to 70% with future decommissioning of coal-fired generating stations).

## KEY RISKS & MITIGATING STRATEGY

The Canada Infrastructure Bank (CIB) will provide the City of Edmonton a loan to finance the differential cost of purchasing an electric over a diesel bus. The financing is repayable only from operational cost savings of electric vs diesel buses over the financing term. Zero Emission Buses (ZEBs) are expected to have lower operational costs than diesel buses. The resulting operational cost savings are the source of funds that the City of Edmonton will be required to use to repay the loan. Cost savings will be shared by the CIB and the City of Edmonton on a fixed proportion. The CIB and the City of Edmonton will share in the risk that actual cost savings are less than forecast, with the CIB expected to ultimately take the repayment risk.

## RESOURCES

Bus assets and the related maintenance is the responsibility of Fleet and Facility Services.

## CONCLUSIONS AND RECOMMENDATIONS

The Federal Zero Emission Bus Program provides an opportunity for the City of Edmonton to purchase an additional 20 electric buses years ahead of schedule. Additional electric buses will provide a cost-effective, environmentally friendly alternative to existing diesel bus technology. These additional units contribute to the City of Edmonton's climate goals, and sets a gold standard transit service for Edmontonians.

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 BRANCH: **Edmonton Transit Service**

**UNFUNDED**  
 PROFILE TYPE: **Standalone**

## CAPITAL BUDGET AND FUNDING SOURCES (000's)

APPROVED BUDGET		Prior Years	2020	2021	2022	2023	2024	2025	2026	2027	2028	Beyond 2028	Total
	Approved Budget	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-
	Current Approved Budget	-	-	-	-	-	-	-	-	-	-	-	-

BUDGET REQUEST	Budget Request	-	-	27,000	-	-	-	-	-	-	-	-	27,000
	Revised Funding Sources (if approved)												
	Federal Gas Tax Fund	-	-	10,917	-	-	-	-	-	-	-	-	10,917
	Pay-As-You-Go	-	-	1,643	-	-	-	-	-	-	-	-	1,643
	Tax-Supported Debt	-	-	14,440	-	-	-	-	-	-	-	-	14,440
	Requested Funding Source	-	-	27,000	-	-	-	-	-	-	-	-	27,000

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	-	27,000	-	-	-	-	-	-	-	-	27,000
	Requested Funding Source												
	Federal Gas Tax Fund	-	-	10,917	-	-	-	-	-	-	-	-	10,917
	Pay-As-You-Go	-	-	1,643	-	-	-	-	-	-	-	-	1,643
	Tax-Supported Debt	-	-	14,440	-	-	-	-	-	-	-	-	14,440
	Requested Funding Source	-	-	27,000	-	-	-	-	-	-	-	-	27,000

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

REVISED BUDGET (IF APPROVED)	Activity Type	Prior Years	2020	2021	2022	2023	2024	2025	2026	2027	2028	Beyond 2028	Total
		Fleet Equipment	-	-	27,000	-	-	-	-	-	-	-	-
	Total	-	-	27,000	-	-	-	-	-	-	-	-	27,000

## 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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-