



**City of Kingston
Report to Council
Report Number 19-140**

To: Mayor and Members of Council
From: Sheila Kidd, Commissioner, Transportation & Public Works
Resource Staff: Jeremy DaCosta, Director, Transit & Fleet Services
Date of Meeting: May 8, 2019
Subject: Purchase of Kingston Transit's First Electric Buses

Executive Summary:

This report recommends the purchase of two 40-foot long range battery electric buses and the associated charging equipment using a combination of grant opportunities and municipal funding sources. These buses will be Kingston Transit's first electric buses and, if approved, can be purchased in 2019 for delivery in 2020.

In May 2018, the City was approved for grant funding through the Federation of Canadian Municipalities (FCM) to support an electric bus purchase. To supplement this funding opportunity, the City made applications to Round 1 and Round 2 of the Provincial GHG Challenge Fund. The City was not successful in receiving funding in Round 1. Round 2 was subsequently cancelled by the Province in July 2018.

The grant funding through the FCM continues to be available to the City for the purchase of one electric bus. The City is required to provide the FCM with its intention to use the grant funding and enter into an agreement no later than June 1, 2019.

In March 2019, the Province of Ontario announced the launch of the public transit stream of the Investing in Canada Infrastructure Program (ICIP) for transit projects in Ontario. The City of Kingston's ICIP allocation for public transit projects is \$42,885,998 in federal funding and \$35,734,758 in provincial funding. The municipality is required to contribute 27% of funding or approximately \$28.5M towards projects to access the City's allocation of ICIP funding. The first intake for ICIP funding closes on May 28, 2019.

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The grant funding from the FCM and the ICIP program will enable the City to introduce two electric buses and the required charging infrastructure into the Kingston Transit fleet for a fraction of the cost.

Part of the planning for incorporating electric buses into the fleet included an initial analysis of the electrical capacity at Kingston Transit's maintenance and storage facility to charge electric buses. Staff has determined that there is electrical capacity at the transit maintenance and storage facility to support charging three to four long range electric buses. However, a detailed electrical capacity study needs to be undertaken in 2020 to identify the electrical infrastructure and costs necessary to charge additional electric buses in support of Council's priority to incrementally electrify the transit fleet.

Recommendation:

That Council approve a capital budget amendment, for the purchase of two 40-foot long range battery electric bus and required charging equipment and services, in the amount of \$2,713,876 funded by a \$556,875 grant from the Federation of Canadian Municipalities, an allocation of \$1,089,712 from the Investing in Canada Infrastructure Program, and \$1,067,289 from the Transit Capital Reserve Fund; and

That the Mayor, Clerk, Chief Administrative Officer and City Treasurer be authorized to sign the funding agreements necessary related to the grant from the Federation of Canadian Municipalities and the Investing in Canada Infrastructure Program as outlined in this report.

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Authorizing Signatures:

ORIGINAL SIGNED BY COMMISSIONER

**Sheila Kidd, Commissioner
Transportation & Public Works**

ORIGINAL SIGNED BY CHIEF ADMINISTRATIVE OFFICER

**Lanie Hurdle, Acting Chief Administrative
Officer**

Consultation with the following Members of the Corporate Management Team:

Gary Dyke, Commissioner, Corporate Enterprise Services	Not required
Peter Huigenbos, Acting Commissioner, Community Services	<input checked="" type="checkbox"/>
Jim Keech, President & CEO, Utilities Kingston	Not required
Desirée Kennedy, Chief Financial Officer & City Treasurer	<input checked="" type="checkbox"/>

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Options/Discussion:

In May 2018, the City was approved for grant funding through the Federation of Canadian Municipalities (FCM) to support the purchase of two 40-foot long range battery electric buses. This FCM grant funding was aligned with an application to Round 1 of the Province of Ontario's Municipal Green House Gas (GHG) Challenge Fund. The City was not successful in the Round 1 application to the GHG Challenge Fund for the purchase of electric buses.

The Province subsequently announced a second round of funding in the Municipal GHG Challenge Fund. In June 2018, City Council approved the purchase of a fully electric long range battery electric bus, subject to receiving funding from Round 2 of the Municipal GHG Challenge Fund, supported by the grant funding that continued to be available through the FCM. The Province cancelled Round 2 of GHG Challenge Fund prior to funding applications being considered.

The FCM grant funding of \$556,875 continues to be available to the City to support the purchase of one 40-foot long range electric bus. The City is required to provide the FCM with its intention to use the grant and must enter into an agreement no later than June 1, 2019 or the funding will no longer be available to the City. All project costs must be incurred before February 28, 2021 to be eligible for FCM grant funding.

In March 2019, the Province of Ontario announced the launch of the public transit stream of the Investing in Canada Infrastructure Program (ICIP) for transit projects in Ontario. ICIP is a bilateral infrastructure program that will invest up to \$30 billion in combined federal, provincial and other partner funding for critical local and regional infrastructure needs.

The City of Kingston's ICIP allocation for public transit projects is \$42,885,998 in federal funding and \$35,734,758 in provincial funding. All projects related to ICIP funding must be substantially completed by March 31, 2027. The municipality is required to contribute 27% of funding or approximately \$28.5M to access the ICIP funding available. The purchase of electric buses is eligible for ICIP funding. The ICIP program will have multiple project application intakes. The first ICIP program intake applications are due on May 28, 2019.

This report recommends the purchase of two 40-foot long range battery electric buses and the associated charging equipment and services. Each bus is expected to travel approximately 75,000 kilometres and operate 4,000 hours annually. The introduction of each electric bus is expected to reduce emissions by approximately 130 tonnes of CO₂e annually. Over the expected 12-year useful life of the each electric transit bus, GHG emissions are expected to be reduced by approximately 1,560 tonnes of CO₂e. The use of diesel fuel by Kingston Transit's buses represents over 30% of the municipality's annual carbon footprint. The transition to electric buses has the potential to significantly reduce the City's GHG emissions.

For a variety of reasons, staff is recommending a cautious approach to integrating electric buses into the transit fleet. While it is clear that electric buses allow for significant reductions in carbon emissions and fuel savings, there are good reasons to be cautious. Electric buses require a greater upfront investment compared to diesel buses so funding assistance to help offset the

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initial cost is vital. It is expected that costs will reduce over time as battery technology improves. This will also help address battery range concerns that are critical factors to ensuring system reliability. The operation of these two buses will allow staff an opportunity to evaluate and understand how additional electrical buses can be incorporated into the Kingston Transit fleet.

The total capital costs for the implementation of these two long range electric buses is estimated at \$2,713,876. This includes the cost of the bus, a charger (including installation and commissioning), staff training, and public marketing/communication highlighting the benefits of Kingston’s first electric buses. The single charger will be capable of charging both of the electric buses. The staff training will also be transferable to future electric bus purchases.

The breakdown of costs is shown in the chart below, inclusive of HST.

Breakdown	Cost
Long Range Battery Electric Buses	\$2,442,240
150kW Fast Charger, including installation and commissioning	\$228,960
Staff Training (mechanics and bus operators)	\$7,500
Public Marketing/Communication	\$10,176
Data Analysis and Reporting – Electric Bus Evaluation	\$25,000
Total Project Costs	\$2,713,876

The City is required to provide FCM with its intention to use the \$556,875 in available grant funding and enter into an agreement no later than June 1, 2019. If the City does not enter into an agreement, the funding will no longer be available. Staff is recommending that the FCM funding be combined with a municipal contribution of \$664,245 funded from the Transit Reserve Fund be used to purchase one electric bus.

Staff is also recommending that a second electric bus, the charger, and other project costs be funded using available ICIP funding of \$1,089,712 combined with a municipal contribution of \$403,044 funded from the Transit Reserve Fund. An application for an ICIP funding allocation will be submitted prior to the May 28, 2019 application deadline.

The total municipal contribution for the project is \$1,067,289. There is currently no approved capital budget allocated for this project.

The following chart outlines the milestones and timelines for this project based on the FCM and ICIP funding timelines.

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Milestones	Timelines
Submit ICIP funding application for Bus 2, charger, other project costs	May 28, 2019
Finalize funding agreement with FCM for Bus 1	June 1, 2019
Issue request for proposals for buses and charger	July 2019
Select supplier and order Bus 1	September 2019
ICIP funding application – Finalize transfer payment agreement for Bus 2 and charger	By October 2019
Order Bus 2 and charger	By October 2019
Install Charger	By July 2020
Bus 1 Received	September 2020
Bus 2 Received	By December 2020

An analysis was completed by an electrical engineering firm to assess the electrical capacity at Kingston Transit's maintenance and storage facility to confirm that there is sufficient capacity to charge an electric bus. It has been confirmed that there is electrical capacity at the Kingston Transit facility to support charging a small number of long range electric buses (three to four). There is also sufficient capacity in the current backup generator to charge a small number of buses during a power outage. However, the existing electrical capacity and infrastructure to support electrification of more buses, and potentially the entire transit bus fleet in future, is inadequate.

It will be critical to understand the electrical infrastructure requirements and associated costs, which could be significant, prior to acquiring any additional electric buses. The cost required to undertake a detailed electrical capacity study of the Kingston Transit facility will be included for Council consideration as part of the 2020 budget deliberations.

Existing Policy/By-law:

Not applicable.

Notice Provisions:

Not applicable.

Accessibility Considerations:

The procurement of the electric bus will include a mandatory requirement that the bus be compliant with all accessibility requirements in the *Accessibility for Ontarians Disability Act* (AODA).

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Financial Considerations:

The recommendation in this report requires a budget amendment of \$1,067,289 funded from the Transit Reserve Fund. Additional funds will be included in the 2020 transit budget for the completion of a detailed electrical capacity study. Significant operating budget savings are anticipated due to the current difference in cost between diesel fuel and electricity, however the actual value of the savings cannot be quantified until battery charging and other EV bus operating costs are more completely understood by staff.

Contacts:

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Other City of Kingston Staff Consulted:

Troy Beharry, Partnership and Grant Development Analyst

Desiree Kennedy, Chief Financial Officer and City Treasurer

Paul MacLatchy, Environment Director, Real Estate and Environmental Initiatives

Bud Steele, Manager, Fleet Services, Transportation & Public Works

Exhibits Attached:

Not applicable.