



Office of the Commissioner
Transportation Services Department

MEMORANDUM

To: Members of Committee of the Whole

From: Ann-Marie Carroll
Acting Commissioner of Transportation Services

Date: August 13, 2021

Re: York Region Transit Fleet Electrification Update

This memorandum updates Council on the York Region Transit electric bus pilot and actions taken in support of the Transit Fleet Electrification Plan, previously-approved by Council in December 2020.

January 2019, Council authorized the purchase of six electric buses as part of the Pan Canadian Electric Bus Demonstration and Integration Trial

The Pan Canadian Electric Bus Demonstration and Integration Trial supports a strategic shift to zero-emission fleets and includes testing and evaluating electric bus technology from Canadian bus manufacturers New Flyer and Nova Bus, as well as demonstrating on-demand charging, with one overhead charger located at the Newmarket Bus Terminal that is compatible with both bus types.

This trial supports goals identified in Council-approved plans including Vision 2051 and the 2019 to 2023 Strategic Plan.

June 2020, the first York Region Transit electric buses went into service

In early 2020, the Region received delivery of six electric buses. Staff began in-garage and on-street testing and commissioning, driver and mechanic training, facility improvements and schedule adjustments to accommodate on-route charging. In partnership with Newmarket-Tay Power, the installation of the overhead charger at the Newmarket Bus Terminal was also completed.

The first electric buses entered service on routes 44 Bristol Road and 55 Davis Drive in the Town of Newmarket.

Over the last year, staff have been monitoring the performance of the electric buses and associated charging systems included in the pilot program.

Data collection has been underway since the electric buses have been in service, including kilometres travelled, energy usage, emission reductions, bus reliability, charging events and operating and maintenance costs. This information is used to evaluate performance, complete comparisons of electric bus models and compare to the existing YRT diesel fleet.

To date, YRT electric buses have travelled over 80,000 kilometres, resulting in a reduction of approximately 67 tonnes of greenhouse gas emissions. The cost of operating an electric bus over the first year of service is approximately 31% less than the cost of a diesel bus of a similar age, when comparing energy costs and preventative maintenance activities. Additional information on the metrics and findings over the past year is included as Attachment 1.

Staff have received positive feedback from bus operators on the implementation and day-to-day operation of the buses. Public interest and engagement have been observed through social media including questions regarding electric bus deployment plans. Traveller and surrounding community benefits include reductions in noise and greenhouse gas emissions.

Although the electric buses and charging equipment are now operating reliably in service, many technical challenges were encountered during the initial stages of the service launch. Battery systems, interoperability and charging equipment required additional post-delivery support by staff and original equipment manufacturers. Managing risk associated with early technology adoption will continue to be a priority as the time required to support the implementation significantly increased from originally estimated. Staff continue to work with industry partners to focus on expectations and requirements for the solutions and support services needed to implement new technology successfully.

Operator and technician training and ongoing development of applicable codes and standards have also been flagged as areas of continued focus during the trial and beyond. Additional technologies, such as collision avoidance and pedestrian warning systems, are also being piloted on the electric bus fleet for evaluation of the reduction in operating noise compared to a diesel bus.

Due to lower ridership resulting from the COVID-19 pandemic, there was a reduction of electric bus kilometres travelled when compared to the modelling stages of the trial. These reductions were considered during the analysis completed over the first year of operation. As service levels and ridership increase throughout year two of the trial, bus performance will continue to be monitored in an environment more reflective of pre-pandemic operations.

During 2021, six additional electric buses were added to York Region Transit service

In [June 2020](#), Council authorized the purchase of six, additional electric buses in 2021. The six electric buses were received and commissioned throughout July and August 2021 and will begin operating on various routes throughout the Region in fall 2021.

The new buses have an increased range of up to 247 kilometres, a 40% increase over the existing electric fleet, allowing for performance evaluation on routes longer in distance with increased traveller loads.

Six in-depot chargers have been installed at 18110 Yonge Street with one additional charger scheduled for installation in 2022. Additional electric bus charging equipment has been included as part of the expansion of 55 Orlando Avenue and is being designed at 8300 Keele Street, with installations currently scheduled for completion in 2023.

Staff continue to explore available funding opportunities to support the Council-approved Transit Bus Fleet Electrification Plan

In [December 2020](#), Council authorized staff to work with agencies and levels of government to identify funding opportunities and submit applications to offset the increased capital costs of electrification.

In March 2021, YRT received \$175,000 from the Canadian Urban Transit Research and Innovation Consortium and the Ministry of Economic Development, Job Creation and Trade, to complete further analysis on electric bus performance and preliminary route modelling and gain an understanding of connected and autonomous vehicle shuttle potential in the Region.

Several potential funding opportunities have been identified to support fleet electrification. Specifically, the Zero Emission Bus Fund, a joint program consisting of \$2.75B in federal grants and \$1.5B in low-interest loans from the Canada Infrastructure Bank is being monitored. Staff are also participating in discussions with peer transit agencies and partners to evaluate opportunities for cooperative procurements as a potential option to reduce pricing.

Updates to the 10-Year Transportation Services Capital Budget and 20-Year Outlook to incorporate the Council-approved Transit Bus Fleet Electrification Plan are underway. These could be adjusted should further funding opportunities be secured.

Staff will report back to Council upon completion of the trial in 2022

Two additional electric buses will be procured in 2022 as staff continue to deliver the phased approach to electrification approved by Council.

Staff will report back to Council in fall 2022 with complete findings from the two-year trial, including lessons learned and recommended updates to the Transit Bus Fleet Electrification Plan.



Ann-Marie Carroll
Acting Commissioner of Transportation



Bruce Macgregor
Chief Administrative Officer

Attachment (1)
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