

City of Mississauga
Corporate Report



<p>Date: January 23, 2025</p> <p>To: Chair and Members of General Committee</p>	<p>Originator's files:</p>
<p>From: Sam Rogers, MBA, Commissioner of Transportation and Works</p>	<p>Meeting date: February 5, 2025</p>

Subject

MiWay Transit Hydrogen Fuel Supply

Recommendation

1. That the report "MiWay Transit Hydrogen Fuel Supply" dated January 23, 2025 from the Commissioner of Transportation & Works be approved.
2. That the Chief Procurement Officer or designate be authorized to award and execute the Special Relationship agreement with respect to the purchase between The Corporation of the City of Mississauga and Enbridge Inc. (also known as 2562961 Ontario Ltd.) for the supply and delivery of green hydrogen fuel in the amount of an estimated \$3 million per year, exclusive of taxes, for a term of up to 10 years, for the MiWay Hydrogen Fuel Cell Electric Bus (FCEB) project, as outlined in the corporate report entitled "MiWay Transit Hydrogen Fuel Supply" dated January 23, 2025 from the Commissioner of Transportation & Works, and all necessary agreements and related ancillary agreements, all in a form satisfactory to the City Solicitor, in accordance with Section 23 of the City's Procurement Bylaw 0013-2022, as amended.
3. That all necessary by-laws be enacted.

Executive Summary

- The purpose of the MiWay Hydrogen Fuel Cell Electric Bus (FCEB) project is to test the use of a unique and innovative propulsion technology as proof of concept within the City of Mississauga's transit service under realistic operating conditions, coupled with testing the feasibility of a reliable hydrogen fuel supply in Ontario.
- MiWay intends to implement a turn-key "Hydrogen-as-a-Service" (HaaS) fueling model, wherein MiWay will not own or operate any hydrogen production, distribution, transportation, or dispensing infrastructure. This includes but not limited to the required associated hydrogen fueling infrastructure at both the Enbridge Markham and Malton

Transit facilities. All operations and maintenance of the hydrogen fueling infrastructure at all locations would be managed by Enbridge, minimizing MiWay's technical, financial, and operational risks. This approach is particularly appealing for small-scale initial deployments such as this one.

- City staff is seeking approval to execute a Special Relationship agreement under Section 23 of the Procurement Bylaw 0013-2022 with Enbridge to provide green hydrogen fuel for this project due to the Enbridge's Markham facility being in relatively close proximity to MiWay Malton facility and continued in-kind labor and support.
- Most of the critical components of the hydrogen refueling infrastructure have been quoted long lead times, which may impact the critical timeline for the project. As a result, specific components such as the hydrogen dispenser, chiller, compressor, and stationary storage need to be ordered by Enbridge as soon as possible to avoid the buses being delivered before the fueling infrastructure is ready. If Council approves the recommendations of this report, City staff will be able to sign off on the Letter of Indemnity, in a form satisfactory to the City Solicitor, between The Corporation of the City of Mississauga and Enbridge to authorize Enbridge to order these critical components before a contract is signed.

Background

The purpose of the MiWay Hydrogen Fuel Cell Electric Bus (FCEB) project is to test the use of a unique and innovative propulsion technology as proof of concept within the City of Mississauga's transit service under realistic operating conditions, coupled with testing the feasibility of a reliable hydrogen fuel supply in Ontario. Supported by a recently completed hydrogen feasibility and infrastructure readiness assessment, this next step in our zero-emission journey will facilitate the purchase, operation, and performance assessment of ten (10) forty-foot Hydrogen FCEBs dispatched from the MiWay Malton Transit Facility, augmented by hydrogen fuel production, distribution and delivery from a third-party supplier. The project seeks to showcase the viability of this technology as a zero-emission solution aligned with MiWay Transit's decarbonization objectives, while promoting the integration of hydrogen as a fuel source to catalyze the development of the hydrogen ecosystem in Mississauga and the Greater Toronto and Hamilton Area (GTHA).

City staff have been working on this project since 2018 and during this time MiWay received Council approval on April 19, 2018 to conduct a small-scale hydrogen FCEB pilot. The project was then paused due to the Provincial decision to cancel the Municipal Greenhouse Gas Challenge Fund and the Cap-and-Trade program, where \$4 million had been allocated directly to this project. The proposed hydrogen fuel supplier withdrew from the proposal as offsets provided through that program were critical to the financial viability of the project.

In 2020, the project was revitalized with new partners as detailed below:

- **MiWay:** The champion transit agency that will own and operate the 10 FCEBs in the City of Mississauga.
- **New Flyer Industries:** The transit bus Original Equipment Manufacturer (OEM) that will be manufacturing and supplying the FCEBs.
- **Enbridge Inc:** The hydrogen delivery partner that specializes in gas transmission and distribution, who will be supplying green hydrogen to fuel for the FCEBs.
- **Ballard Power Systems:** The OEM that specializes in the development and manufacturing of hydrogen fuel cell stacks that will be used in the FCEBs.
- **Canadian Urban Transit Research & Innovation Consortium (CUTRIC):** the commercialization partner specializing in program management and predictive and empirical performance analysis.

In 2022, CUTRIC completed a fulsome Hydrogen FCEB feasibility study for the City to understand hydrogen fuel supply and storage options, vehicle design and implementation, statutory and regulatory requirements (e.g. Clean Fuel Standards), economic and financial viability (including carbon pricing mechanisms), and Greenhouse Gas (GHG) reduction opportunities. The results of the study were favourable for the project, and the City continued to pursue the project based on recommendations of the report.

On September 18, 2024, City staff presented a Corporate Report to Budget Committee to request approval to single-source the supply and delivery of ten (10) hydrogen FCEBs to New Flyer Industries. This report was approved by Council on September 25, 2024 (resolution 0191-2024 approving BC-0005-2024), and as a result City staff are currently finalizing a contract to issue a purchase order to New Flyer Industries.

Comments

Hydrogen Fuel Supply

MiWay intends to implement a turn-key "Hydrogen-as-a-Service" (HaaS) fueling model, wherein MiWay will not own or operate any hydrogen production, distribution, transportation, or dispensing infrastructure. This includes but not limited to the required infrastructure installations at both the Enbridge Markham and Malton Transit facilities. All operations and maintenance of the hydrogen fueling infrastructure at all locations would be managed by the service provider, minimizing MiWay's technical, financial, and operational risks. This approach is particularly appealing for small-scale initial deployments such as this one.

Due to the technical, operational, and financial complexities of the Hydrogen FCEB project, the City requires a hydrogen supplier with specific and critical qualifications to deliver hydrogen at a scale of 30kg/bus/day. For the reasons below, City staff is requesting Council approval to enter into a Special Relationship agreement under Section 23 of the Procurement Bylaw 0013-2022, as amended, with Enbridge to provide green hydrogen fuel for this project:

- **Proximity to Malton Satellite Facility:** Local geography is paramount to avoiding disruptions in the supply chain. Enbridge's Markham facility, located approximately 40 kilometers from MiWay's Malton facility, minimizes the risk of delivery delays due to highway congestion or traffic, which could compromise bus uptime. Proximity to the supply source ensures consistent hydrogen availability for MiWay's operations, safeguarding the project's performance and reliability. These factors make Enbridge a viable supplier, able to meet the immediate operational requirements of this project.
- **In-Kind Labor and Support:** In addition to financial contributions, Enbridge has offered in-kind labour and support worth approximately \$20,000. This includes support for committee development work, site visits and planning for the Malton facility. Furthermore, Enbridge contributed pro-bono intellectual property to aid in Malton's electrification site planning, a cost that MiWay would typically bear through private consultancy.

In addition, the hydrogen produced at Enbridge's electrolyzer plant in Markham, Ontario will use electricity from Ontario's clean grid.

Next Steps

Most of the critical components of the hydrogen refueling infrastructure have been quoted long lead times, which may impact the critical timeline for the project. As a result, specific components such as the hydrogen dispenser, chiller, compressor, and stationary storage need to be ordered by Enbridge as soon as possible to avoid the buses being delivered before the fueling infrastructure is ready.

If Council approves the recommendations of this report, City staff will be able to sign off on the Letter of Indemnity, in a form satisfactory to the City Solicitor, between The Corporation of the City of Mississauga and Enbridge, to authorize Enbridge to order these critical components before a contract is signed. Once the Letter of Indemnity is signed, a subsequent formal and long-term contract, in a form satisfactory to the City Solicitor, will be developed and reviewed alongside the City's legal, procurement, and finance teams for sign off.

Strategic Plan

The Hydrogen FCEB project would contribute to two strategic goals: **Move** (Develop Environmental Responsibility) and **Green** (Lead and Encourage Environmentally Responsible Approaches). Mississauga has been proactive in sustainability and climate change governance for over two decades. In March 2023, Council reaffirmed its commitments to climate action and through a motion, directed staff to produce a pathway report on how to meet new community-wide science-based targets for 2030 and to commit to net zero on, or before, 2050. Through its 2019 Climate Change Action Plan (CCAP), the City has committed to replace the transit bus

fleet with low or zero emission vehicles and to pursue innovative low or zero emission pilot and partnership opportunities (actions 17-5 and 17-6). The Hydrogen FCEB project will support both these actions and showcase the City as a leader on climate change.

Financial Impact

The estimated cost for the MiWay hydrogen fuel supply will result in a cost increase of an estimated \$3 million per year and will be requested through the 2026 Operating Budget and Business Plan. This aligns with the timing of when the hydrogen buses are anticipated to become operational. The final cost will be dependent on the length of the contract and final specifications.

Conclusion

The Hydrogen FCEB project is essential for ultimately achieving the goals of the Climate Change Action Plan. With Council's approval for the hydrogen fuel supply component of this project, MiWay will pilot this innovative hydrogen FCEB technology, setting the stage for transit fleet decarbonization and positioning itself as an industry leader.



Sam Rogers, MBA, Commissioner of Transportation and Works

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