

GOVA Transit Zero Emission Transition Plan

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Recommended by:	General Manager of Community Development

Report Summary

This report provides a recommendation regarding the adoption of the GOVA Transit Fleet Zero Emission Transition Plan, which supports the Community Energy and Emissions Plan (CEEP) goal of electrifying Transit by 2035.

Resolution

THAT the City of Greater Sudbury adopts the GOVA Transit Fleet Zero Emission Transition Plan as the official plan to electrify Transit by 2035 as outlined in the report entitled “GOVA Transit Zero Emission Transition Plan” from the General Manager of Community Development, presented at the Community and Emergency Services Committee meeting on March 17, 2025;

AND THAT the City of Greater Sudbury directs staff to develop relevant business cases, including comprehensive funding strategies based on the GOVA Transit Fleet Zero Emission Transition Plan recommendations, for inclusion in the 2026 budget deliberations.

Relationship to the Strategic Plan, Health Impact Assessment and Climate Action Plans

This report describes work related to the City of Greater Sudbury Strategic Plan to develop and strengthen strategies and policies to mitigate and/or adapt to impacts of Climate Change.

Within the Low-Carbon Transportation Strategy Sector of the Community Energy & Emissions Plan, this report aligns with Goal 9 to electrify 100% of transit fleet by 2035.

Financial Implications

There are no financial implications associated with this report. Subject to Council’s adoption of the GOVA Transit Fleet Zero Emission Transition Plan, staff will prepare a business case for the 2026-2027 budget (and subsequent budgets) that considers the recommendations within this plan.

The GOVA Transit Fleet Zero Emission Transition Plan provides a clear roadmap for GOVA Transit to electrify its fleet by 2035. The incremental cost over the study period of 2023-2050 inclusive of operating,

maintenance, and infrastructure costs, is anticipated to be \$89 million. Staff will identify funding programs to reduce the municipal impact of transition costs, if applicable, and include in the business case.

Background

The City of Greater Sudbury is committed to achieving a greener economy and reducing energy consumption in response to its Climate Emergency Declaration from May 2019. As part of this effort, the Community Energy and Emissions Plan (CEEP) was developed, aiming for net-zero emissions by 2050. Transportation focused goals include electrifying 100% of the GOVA Transit.

In alignment with CEEP goals, the City of Greater Sudbury participated in a Battery Electric Bus Joint Procurement Roadmap as part of Metrolinx's Joint Transit Procurement Initiative in 2021. The Battery Electric Bus (BEB) Roadmap provided a framework for fleet electrification for Ontario agencies, beginning with the acquisition of consulting services to develop and plan for full fleet electrification.

With approved funding through the Zero Emission Transit Fund (ZETF), the City of Greater Sudbury received \$112,856 towards consulting services in the development of a Transit Fleet Zero Emission Transition Plan feasibility study and Municipal Fleet Analysis. The scope of work included six tasks: Route Modelling and Schedule Optimization, Facility Assessment, Full Fleet Electrification Transition Plan, Municipal Fleet Analysis, Noise Assessment and Climate Adaptation and Resilience Assessment.

Executive Summary

The Zero Emission Fleet Transition Plan provides a clear roadmap for GOVA Transit to electrify its fleet by 2035, built around a phased approach. The transition is not just about acquiring electric buses, but also integrating new technologies and operational strategies into service delivery, which will address fleet, infrastructure, and cost requirements. With phased implementation, careful attention to infrastructure needs, and strategic cost management, it outlines key steps for the City of Greater Sudbury to meet its sustainability targets, while providing reliable and efficient service for the community.

The fleet transition is planned in alignment with GOVA's existing conventional diesel bus fleet replacement schedule, allowing Staff to gain valuable experience with Battery Electric Buses (BEBs), as the technology matures. The plan consists of four distinct phases, each of which are subject to future Council decision making as a part of future year's budget deliberations :

- **Phase 1** (2025-2029): Transition 27 diesel buses to battery electric, with plug-in depot charging only.
- **Phase 2** (2030-2031): Transition 9 diesel buses to battery electric, with continued depot charging; install en-route charging at the Downtown Hub.
- **Phase 3** (2032): Transition 7 diesel buses to battery electric.
- **Phase 4** (2033-2035): Transition 16 diesel buses to battery electric.

The approximate total cost over the study period of 2023-2050 inclusive of operating, maintenance, and charging infrastructure costs, is anticipated to be \$578M; an increase of \$89M (2023 dollars), in comparison to existing diesel bus operations, over a 12-year lifecycle. Despite increased capital costs for buses and infrastructure, as well as increased operating costs attributed to increased non-revenue bus swaps, a cost savings in the amount of \$19M is realized in fueling, which offsets the overall net cost to transition the fleet.

While analysis through this feasibility study confirms that costs to operate a fully electrified transit system are more than it would be to operate the existing diesel transit system, the plan highlights long-term benefits of transit electrification including significant emission reductions; making it a vital step toward achieving net-zero emissions by 2035. Annual emissions are expected to be reduced from approximately 5,600 tonnes of greenhouse gas (GHG) emissions per year to just over 600 tonnes of GHGs per year. Compared to a scenario where the fleet is not transitioned to BEBs, this results in a reduction of approximately 94,300 tonnes of GHGs over the study period. This reduction occurs even though some residual emissions from the diesel auxiliary heaters in the BEBs are expected.

Transit Fleet Zero Emission Transition Plan

The GOVA Transit Fleet Zero Emission Transition Plan outlines a four-phase roadmap to fully electrify the transit fleet by 2035. It includes a bus procurement schedule and phased deployment insights. The plan focuses on analyzing Battery Electric Bus (BEB) technologies, energy consumption, and determining appropriate charging infrastructure. Key elements addressed are System Level Planning, Operational Planning & Development, Capacity to Implement the technology, Financial Planning, and Environmental benefits.

System Level Planning

Battery Electric Buses (BEBs) & Charging Options: BEBs are favored for their use of the electric grid, but they have limited range compared to diesel buses. For longer routes, additional vehicles or en-route charging may be needed. En-route charging at transit centers can help extend BEB range, particularly for circular routes with layover times.

Energy Consumption Analysis: GOVA Transit worked with HDR, Inc. to model energy consumption and its impact on service, using the Zero+ model. This model analyzed factors like route terrain, vehicle stops, and temperature to develop a detailed energy profile specific to GOVA Transit's operations. It also examined variables like battery degradation, HVAC load, and operating environment.

Modelled Scenarios: The energy consumption model analyzed five different scenarios, each testing different combinations of BEB configurations, battery sizes, and charging strategies. These scenarios tested the feasibility of transitioning to BEBs, considering battery sizes, auxiliary heating needs (diesel heaters were preferred for winter climates), and the impact on service operations:

- Baseline (Diesel)
- Full BEB Fleet (ii) 525 kWh or iii) 675 kWh batteries) with Depot Charging Only
- Full BEB Fleet (iv) 525 kWh or v) 675 kWh batteries) with Depot and En-Route Charging

With depot charging alone, about half of the fleet (27 of 59 buses) can be transitioned to BEBs without needing extra vehicles or en-route charging. The recommended approach is to transition to a full fleet of 675 kWh BEBs, supported by both depot and en-route charging at key locations like GOVA Transit Hubs. While the transition plan suggests that GOVA Transit can replace diesel buses with BEBs, the recommended transition suggests a combination of depot and en-route charging infrastructure to maintain service levels without expanding fleet size.

Operational Planning and Development

This section outlines the critical fleet and infrastructure needs for the implementation of Battery Electric Buses (BEBs), including the phased deployment of the fleet, facility upgrades, and infrastructure for charging. The deployment of BEBs will take place in phases to ensure smooth transition and continued service efficiency.

GOVA's main facility is located at 1160 Lorne Street and currently supports 59 diesel buses. This facility will require upgrades to accommodate BEB charging, including direct current (DC) Fast Chargers and Facility modifications.

The transition plan recommends that GOVA Transit begin transitioning its fleet to BEBs in 2026. The transition will occur gradually, starting with replacement of older diesel buses with BEBs that align with the current fleet size and service levels. All BEBs purchased during the transition will have a 675 kWh battery supported by 150 kW plug-in chargers at the Lorne Street Depot, each powered by two (2) new 2,000 kVA unit substations.

- **Phase 1 (2025-2029):** The first phase involves the purchase of 27 BEBs, replacing diesel buses on a one-to-one basis. Charging infrastructure will include the installation of nine 150 kW plug-in chargers at the depot; the first 2,000 kVA substation will be ordered in 2025, for installation at the Lorne Street Depot.
- **Phase 2 (2030-2031):** Nine (9) BEBs will be added (to replace diesel buses on a one-to-one basis). En-route charging infrastructure will be installed at the Downtown Hub, alongside the continued deployment of infrastructure (3 150 kW plug-in chargers) to support at depot charging. A second 2,000 kVA substation will be installed at the Lorne Street Depot in 2030.
- **Phase 3 (2032):** Seven (7) BEBs will be added to bring the active fleet to 43 BEBs; still replacing diesel buses at a one-to-one basis. En-route charging and depot charging (3 150 kW plug-in chargers) will continue to support the fleet.
- **Phase 4 (2033-2035):** The final phase will bring the fleet to 59 BEBs and 100% of the conventional transit fleet, with the purchase of 16 BEB's (including spares) completing the transition. 5 150 kW plug-in chargers will be installed at the depot in this phase.

By the end of Phase 4, the conventional transit fleet will be entirely electrified, with 59 BEBs in service. A total of two (2) 2,000 kVA substations will have been installed at the Lorne Street Transit Depot; further, twenty (20) 150 kW plug-in chargers will be installed, with capacity to charge a fleet of 60 BEB's (3 per unit). The phased approach ensures that GOVA Transit can procure and integrate the necessary buses and charging infrastructure for the full electrification by 2035.

During the first two phases of electrification, GOVA Transit will maintain current service levels without increasing fleet size. However, for future service expansion (such as that seen in September 2024), GOVA will monitor the feasibility of one-to-one vehicle replacement based on route lengths and energy efficiency. Routes requiring more than 307 km of travel would need either additional vehicles for swapping or en-route charging and dedicated layover to meet the service and energy demands.

As Greater Sudbury expands its transit system, further en-route charging locations will be considered based on service needs and financial feasibility. These sites will be assessed through ongoing studies and future expansions of the transit system.

Enterprise Asset Management Plan Alignment

The City of Greater Sudbury's Enterprise Asset Management Plan (2023) emphasizes making informed decisions about acquiring, maintaining, and disposing of assets to sustainably provide municipal services. The plan is aligned with the city's strategic goals, particularly focusing on asset management and service excellence. For expanding the asset footprint, the plan recommends:

1. **Long-term Financial Planning:** Using the plan to inform future capital projects and asset life-cycle interventions.
2. **Service Delivery:** Ensuring reliable service delivery by supporting municipal infrastructure systems with effective plans and financing decisions¹.
3. **Key Performance Indicators:** Returning to Council to confirm asset levels of service and related key performance indicators for each asset class¹.

These recommendations aim to enhance the city's infrastructure while maintaining a sustainable approach to asset management.

To support operational planning, the City of Greater Sudbury and Greater Sudbury Utilities (GSU) have executed a Memorandum of Understanding whereas GSU will support necessary feasibility analysis related to GOVA's electrification. The Parties intend to explore a potential commercial agreement that would involve GSU and GOVA collaborating toward Electrification Infrastructure upgrades including but not limited to GOVA's 1160 Lorne Street Garage, and three (3) identified Transit Hubs with consideration for GSU to undertake the design, procurement, construction, operation, and maintenance of the Electrification infrastructure and the associated Energy Management Systems for the Facilities.

Given the high costs associated with battery electric bus charging infrastructure, the plan’s focus on long-term financial planning and effective service support suggests that exploring third-party ownership models could be a viable option. This approach could help manage lifecycle costs and ensure reliable service delivery without the City taking on additional assets.

Capacity to Implement Technology

This section of the plan discusses GOVA Transit’s capacity to implement a new Battery Electric Bus (BEB) fleet, focusing on the necessary staffing, training, and risk management strategies for a successful transition. It further outlines the necessary steps to build a skilled workforce ensuring safety, efficiency, and competency among all relevant staff.

GOVA Transit recognizes the importance of training staff on BEB systems and components to ensure safe and efficient operations. The City will collaborate with training programs, Original Equipment Manufacturers (OEMs), and other transit agencies to train the existing workforce. The plan includes assessing existing skills, identifying gaps, and developing a training program for bus operators and maintenance personnel. A workforce growth strategy will be created to recruit, retain, and support employees, with funding opportunities for expansion.

GOVA Transit’s technical training will evolve as it integrates new vehicles and systems into its fleet. New OEM training modules will be procured to cover all vehicle systems, subsystems, and components. A phased approach will be taken for battery electric bus (BEB) specific training, expanding the number of trained mechanics/technicians as the fleet grows. A core group of BEB fleet specialists will be developed through hands-on experience to ensure a smooth transition to a fully zero-emission workforce, including the creation of an Electric Vehicle Technician who will support enterprise-wide transition to electrification. The plan outlines collaboration with other regional transit agencies and training providers to optimize training resources, given the shortage of qualified BEB OEM trainers. Partnerships with local institutions, such as Cambrian College’s Industrial Battery Electric Vehicle Maintenance Certificate Program, will help develop a skilled workforce for BEB maintenance.

Financial Analysis

This section provides a financial analysis that compares two scenarios: the Baseline Scenario (continued operation with diesel buses) and the Battery Electric Bus Transition Scenario (BEB - full conversion).

Capital costs include the purchase of buses and infrastructure like charging stations and required electric upgrades. The capital cost assumptions for each bus and infrastructure component are included in Table 1.

Table 1: Capital Cost Assumptions

Conventional Fleet Capital Assumptions	
Diesel Bus Cost	\$780,000
Battery Electric Bus Cost (675 kWh)	\$1,874,287
Plug-In Depot Charger (150 kW)	\$133,900
Plug-In Depot Cable Dispenser	\$44,596
Pantograph Charger (450 kW)	\$312,455

Table 2 provides a comparison of total operating cost estimates over the 2023 to 2050 period for the Baseline and BEB scenarios. It is anticipated that the cost of the BEB scenario will be \$89.1 million more than existing diesel operations in discounted 2023-dollar terms over the 2023 to 2050 period. The result shows that the higher capital cost of the transition to BEBs is not offset by fueling cost savings relative to the Baseline Scenario.

Table 2: Comparison of Baseline and BEB Financial Scenarios

	Baseline	BEB	Variance
Bus Purchases	\$58.0	\$139.3	\$81.4
Related Infrastructure	-	\$16.8	\$16.8
Lifecycle Capital Costs	\$58.0	\$156.2	\$98.2
Operations & Maintenance	\$380.1	\$388.3	\$8.1
Fueling	\$51.1	\$32.1	-\$19.0
Related Infrastructure O&M	-	\$1.8	\$1.8
Lifecycle O&M	\$431.2	\$422.1	-\$9.1
Total	\$489.2	\$578.3	\$89.1

Where BEB technology is still relatively new, longer-term detailed analysis of vehicle maintenance costs is not available. Diesel spending is significantly lower in the BEB Scenario due to the rapid transition to BEBs. Higher BEB operating costs (due to incrementally higher kilometers travelled from swaps) more than offset the decrease in operating costs attributable to diesel buses. Values in the variance column represent expenditures by bus type under each scenario, and do not represent savings.

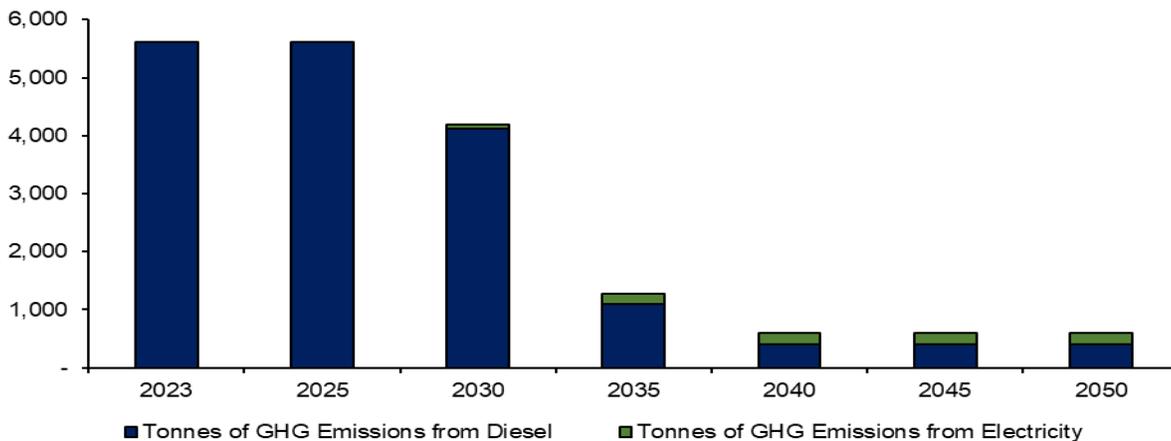
Fuel and electricity costs associated with the transition include the propulsion of diesel and BEBs, and diesel fuel required to operate diesel heaters on board BEBs. Fuel costs are more expensive due to the increasing price of diesel, driven in part by escalating carbon taxes, with realized savings of \$19 million over the scenario period.

Environmental Benefits

GOVA Transit’s shift to a 100% Battery Electric Bus fleet will contribute to substantial GHG emissions reductions, aligning with environmental goals and supporting a cleaner, more sustainable transit system for the City of Greater Sudbury.

GOVA Transit’s diesel buses emit approximately 5,600 tonnes of GHGs annually. After the full transition to BEBs, the annual GHG emissions drop dramatically to just over 600 tonnes per year. This represents a reduction of about 157 tonnes of CO2 per bus annually. Over the study period, this transition will result in a total GHG emissions reduction of approximately 94,300 tonnes. This savings is attributed to the shift from diesel fuel to electricity, with a decrease in emissions due to the cleaner electricity grid over time. The environmental benefits of transitioning to BEBs are substantial, as summarized in the table and figure below:

Chart 1: GHG Projections 2023-2050



Funding Opportunities

Leveraging provincial and federal funding opportunities and considering third party asset ownership models, GOVA Transit can offset capital outlays and potentially reduce the financial impact of the transition. Transitioning to a zero-emission fleet will require a significant initial investment, particularly for bus purchases and infrastructure, however, environmental benefits make it a viable option for the City of Greater Sudbury to meet its CEEP goal of a 100% electrified fleet by 2035.

Current funding opportunities that support transit electrification are:

Canadian Permanent Transit Fund (CPTF)- Federal: The City of Greater Sudbury was successful in its Expression of Interest application for the Baseline Funding stream of the permanent Canada Public Transit Fund. An allocation of funds in the amount of \$1.4 million annually, over 10 years, is available to support the GOVA Zero Emission Transition Plan, upon submission and approval of a capital plan prior to April 1st, 2026.

Investing in Canada Infrastructure Program (ICIP)- Federal/Provincial: The Accelerated Bus Fleet Replacement Funding Program capital project ICIP-SUD-01 replaces GOVA Transit diesel buses which have reached the end of their lifecycle to reduce maintenance costs and provide the user with a more reliable transit experience. The approved project scope of work is for the purchase of 53 diesel replacement buses (40-foot-low-floor), at six buses per year, ending in 2027. Proceeding with the purchase of BEBs under this program requires a modification request to the Ministry of Transportation to change the scope of work from diesel buses to battery electric buses.

In response to capital cost increases for diesel buses, and inflationary pressures, a modification request has been submitted to ICIP on behalf of the City of Greater Sudbury requesting to reallocate funds from the Bus Rapid Transit project (ICIP-SUD-05) to the Accelerated Bus Fleet Replacement Program (ICIP-SUD-01) to cover capital costs of bus purchases in the amount of \$10,250,000. The request is necessary to cover price escalation and ensure the full scope of the bus replacement project can be achieved.

While this modification request is under review, a project scope change cannot be submitted to change ICIP-SUD-01 funding from diesel buses to BEBs. The City's application request will take approximately nine months to approve.

Zero Emission Transit Fund (ZETF)- Federal: The City of Greater Sudbury was approved for \$112,856 within the Planning stream of the Permanent Public Transit Fund- Zero Emission Transit Fund, to support the completion of necessary planning and feasibility work. Within a capital stream, eligible recipients can receive grants covering up to 50% of eligible capital costs for BEBs and charging infrastructure. Upon approval of the GOVA Transit Fleet Zero Emission Transition Plan, the City of Greater Sudbury will be applying to future intakes, recognizing federal funding stacking maximums. According to Housing, Infrastructure, and Communities Canada, the current ZETF envelope is anticipated to be fully allocated soon. Greater Sudbury has been advised to wait for the announcement of the next funding intake under the Canada Public Transit Fund before applying.

Green Municipal Fund (GMF) – Federal: The Green Municipal Fund (GMF) is a federal program that provides grants and loans to municipalities for projects that aim to improve environmental sustainability, such as reducing greenhouse gas emissions and enhancing energy efficiency. Municipalities can apply for funding to support feasibility studies, pilot projects, and full-scale implementations.

Potential Challenges

U.S. Tariffs

U.S. tariffs pose a threat to Canadian Transit Manufacturing and Affordability. Although there is a 30-day temporary pause on tariffs as of February 3rd, 2025, significant risks persist, potentially destabilizing North

America's transit manufacturing and clean energy production sectors. The imposition of 25% tariffs on Canadian exports, coupled with 10% tariffs on energy products, could lead to increased public transit costs, delays in vehicle deliveries, uncertainty for manufacturers, and adverse effects on electricity and hydrogen production—both crucial for Canada's transition to zero-emission transit.

Through resolution CC2025-51, City of Greater Sudbury Council approved a motion to address the impact of U.S. tariffs. The motion calls on the federal and provincial governments to provide municipalities with greater flexibility to prioritize the purchase of products, supplies, and materials from countries other than the United States. This is in response to the challenges posed by U.S. tariffs and aims to ensure that public investments benefit Canadian businesses and worker.

Under the current Metrolinx Agreement, the City of Greater Sudbury procures transit buses through the manufacturer, New Flyer. While New Flyer BEBs are currently manufactured in both Canada and the U.S., the company plans to complete all BEB production in Winnipeg, Canada by the end of Q3 2025.

Zero Emission Transit Fund- Application Denial

In Fall 2024, both the City of Saskatoon and the City of Durham faced setbacks with their applications for funding under the Zero Emission Transit Fund (ZETF). Saskatoon's application was denied in September 2024, leading them to spend \$23M on new diesel buses. Similarly, Durham anticipated receiving \$33M million in grant funding from the ZETF for the purchase of 34 battery-electric buses and the necessary charging equipment and infrastructure. However, Infrastructure Canada recently informed Durham that they would not receive the funding. Consequently, Durham voted to purchase 18 diesel buses instead.

Operational Challenges Colder Climate

The City of Edmonton's battery electric bus implementation has faced significant challenges. Initially, the city purchased 60 electric buses from the U.S. company Proterra, aiming to provide a greener and more efficient public transportation option. However, many of these buses have experienced frequent breakdowns, leading to substantial maintenance costs and operational issues.

Where performance guarantees for Edmonton's climate specified an operation range of 328 kilometres at the beginning of battery life and 268 kilometres in extreme cold, no buses ever achieved 328 kilometres, and bus range in the winter has been approximately 165 kilometres. In contrast, a diesel bus in GOVA Transit service with a full tank of fuel, at 474 liters, can travel anywhere between 600 and 800 kilometres. As an example, a bus assigned to Route 105 Valley travels up to 600 kilometres a day without refueling.

Complicating matters further, Proterra filed for Chapter 11 bankruptcy protection, which has delayed the availability of necessary replacement parts. As a result, more than half of Edmonton's electric buses are currently out of service. Despite these setbacks, Edmonton remains committed to sustainable transportation and continues to explore other options, including hydrogen fuel cell buses.

Fire Services

Concerns noted by Fire Services surround charging and storage of electric vehicles inside garage or enclosed spaces. These concerns relate to the significant hazard a battery-electric fire poses as it can be difficult to control and due to the volatility of the battery when it combusts, can cause serious impacts to the adjacent vehicles or equipment. Stored inside a facility, a battery fire on one transit bus would impact several units around it, most likely before they could be safely moved, or the fire placed under control; water or firefighting foam systems have a minimal impact on these types of fires and few alternatives currently exist.

In addition to the transit fleet stored and repaired at the Lorne Street Depot, Fire Apparatus, Paramedic Ambulances, Municipal small and large fleet vehicles are all stored and repaired in the same location. This makes any storage location a critical component of several key infrastructure and community safety services.

As transit buses are stored indoors, consideration should be made with respect to the storage and charging of electrified vehicles inside the garage.

GOVA Project Risks/Mitigation

Transitioning GOVA Transit's fleet to Battery Electric Buses (BEBs) presents several risks. Detailed descriptions of these risks and their mitigation strategies are provided in Appendix A of the GOVA Transit Fleet Zero Emission Transition Plan (pages 35-38). Staff will continue to reference this appendix throughout the transition planning process.

Interim Opportunities to Reduce Emissions

HYGN Hydrogen Fuel Technology

The City of Greater Sudbury Fleet department is participating in a hydrogen fuel technology system pilot program that is expected to generate fuel cost savings and significantly decrease vehicle/equipment emissions up to 75% on existing diesel fleet vehicles aligning with CEEP goals; this pilot will include one Transit Bus NOVA LE25 diesel where the cost of one HYGN unit is \$10,000.

The City of Kawartha Lakes reported the results from their pilot as promising, where the HYGN hybrid kit has demonstrated substantial fuel savings and emissions reductions aligning with sustainability goals.

Next Steps

Given the above feasibility work, should Council elect to direct staff to begin the transition to BEB, Staff will bring forward a business case for 2026-2027 budget deliberations that further outlines financial requirements to support.

Resources Cited

Evaluating the potential impacts of US tariffs

<https://www.bankofcanada.ca/publications/mpr/mpr-2025-01-29/in-focus-1/>

Why your city is still waiting on e-buses - and how tariffs could make things worse

<https://www.cbc.ca/news/canada/ottawa/ebus-ottawa-canada-usa-tariff-1.7459686>

Capital Project Budget Re-allocations and 2024 DRT Bus Order, Durham Region Transit Report November 6, 2024

<https://pub-durhamregion.escribemeetings.com/filestream.ashx?DocumentId=5445>

Saskatoon Transit 2025 Fleet Renewal Request

<https://pub-saskatoon.escribemeetings.com/filestream.ashx?DocumentId=228806>

"We're looking at 2025 to get back on track": DRT's zero-emission plans hit speed bump due to lack of federal funds

<https://www.durhamradionews.com/archives/190570>

Saskatoon pivots after federal funding for electric buses denied

<https://thestarphoenix.com/news/local-news/saskatoon-pivots-after-federal-funding-for-electric-buses-denied>

City of Edmonton's electric bus fleet plagued with issues, over half not in service

<https://globalnews.ca/news/10112257/edmontons-electric-bus-fleet-proterra-issues/>

Edmonton's fleet of electric buses failing amid manufacturer's bankruptcy proceedings

<https://www.cbc.ca/news/canada/edmonton/edmonton-buses-proterra-1.7035186>