Fleet Low Emissions Vehicles

Presented To:	City Council
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Type:	Managers' Reports
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Recommended by:	General Manager of Community Services

Report Summary

This report provides a recommendation regarding the implementation of the Fleet Electrification Plan.

Resolution

THAT the City of Greater Sudbury approves the Fleet Electrification Plan as outlined in the report entitled "Fleet Low Emissions Vehicles" from the General Manager of Community Services, presented at the City Council meeting on October 7, 2025;

AND THAT the City of Greater Sudbury directs staff to implement the Fleet Electrification Plan and incorporate this plan when preparing future budgets.

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

This report aligns with priority 3.1 in the Strategic Plan as it seeks to implement actions to support Council's declaration of a climate change emergency. Within the Low-Carbon Transportation Strategy Sector of the Community Energy & Emissions Plan, this report aligns with Goal 9 to electrify the City fleet by 2035.

Financial Implications

There are no immediate financial implications associated with this report. Staff have budgeted for electric vehicle and electric ice resurfacing equipment replacement in the 4-year capital budget from 2024-2027. Subject to Council's adoption of the Fleet Electrification Plan, staff will incorporate the recommendations within this plan when preparing the 2028-2031 capital budget (and subsequent budgets). Staff will also incorporate maintenance and fuel savings into future operating budgets.

Purpose

This report responds to resolution CC2024-294 that requested a report on the status of low emission vehicles and plans for increasing the low emission vehicle fleet.

Background

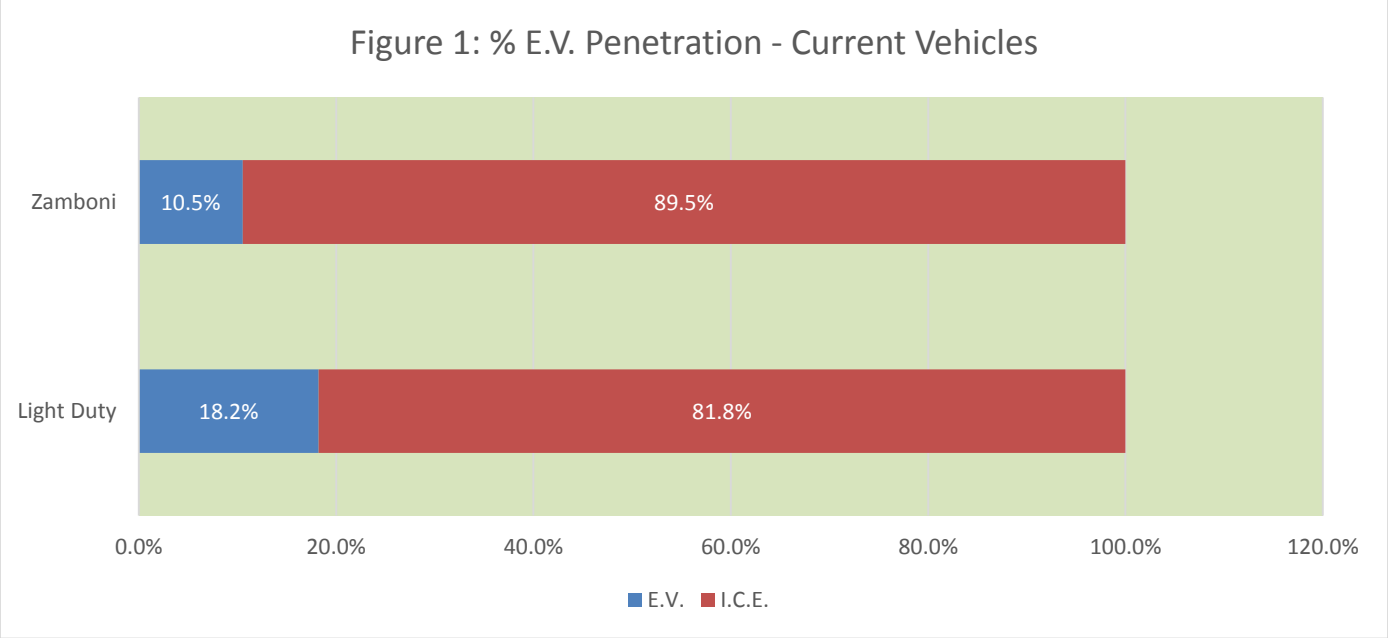
The Community Energy and Emissions Plan (CEEP) is the long-term plan to reduce carbon emissions and

pollution in Greater Sudbury. It responds to City Council's Climate Emergency declaration in May 2019, which included a commitment to achieve net-zero emissions by 2050. That means reducing greenhouse gas emissions (GHG) caused by human activity to as close to zero as possible and removing remaining emissions from the atmosphere. Similarly, the Government of Canada's 2030 Emissions Reductions Plan outlines a target to cut greenhouse gas (GHG) emissions by 40 percent below 2005 levels by 2030 and achieve net-zero emissions by 2050.

On-road transportation accounts for approximately 18 percent of Canada's total GHG emissions. The transition to zero-emission vehicles (ZEVs) plays a prominent role in reducing these emissions. To support this, the Government of Canada enacted an Electric Vehicle Availability Standard to assist in reducing greenhouse gas emissions and combating climate change. This mandate is under review but currently requires all automakers to have a 100% light duty electric vehicle lineup in Canada by 2035.

The City of Greater Sudbury's Fleet Electrification Plan (appendix) conforms to these mandates. The plan details a scope that focuses on electric vehicle implementation for the City's light duty and ice resurfacing fleet including related charging infrastructure. The medium and heavy-duty fleet do not have commercially viable electric vehicle replacements on the market today. The feasibility of electrifying these classes of vehicles will be reviewed in the future.

The City of Greater Sudbury has already taken steps to electrify the City fleet of light duty vehicles and ice resurfacing equipment. Currently, the City has a fleet of 29 light duty electric vehicles and two electric ice resurfacing machines that are in use or on order. The electric vehicle penetration rate for in scope light-duty vehicles and the ice resurfacing fleet is 18.2% and 10.5% respectively and is displayed in Figure 1 below.



Fleet Electric Vehicle Implementation

The financial analysis in the Fleet Electrification Plan (appendix) considers two scenarios:

1) Baseline – This is a business-as-usual case that considers no transition to EV's and the continued replacement of vehicles with new ICE vehicles.
2) Electric Vehicle Transition- This considers the replacement of the ice resurfacing fleet and all ICE light duty except for some emergency services (fire, paramedics) vehicles due to time demands and location of work.

The analysis considers the cash flow required from 2026-2036 required to fund the EV transition. These

costs are inflated at 3% annually and are representative of expected costs in the year the expenditure is incurred. The analysis of the transition period will be used for budgeting of both capital and operating expenses.

A lifecycle analysis is also utilized to provide the information necessary in deciding whether to transition to EV's or continue with the baseline scenario. This lifecycle analysis considers all lifecycle costs of each vehicle type. Thus, providing for a consistent and comparable timeframe amongst the two options. The lifecycle analysis presents all dollar values in net present value (NPV) terms. NPV analysis accounts for the "time value of money," the principle that a dollar today is worth more than a dollar tomorrow.

Detailed results of both the cash flow and NPV can be found in the appended Fleet Electrification Plan.

Cash Flow

In summary, the total costs for the baseline scenario are outlined in Figure 2 and total $16.88 million over the 2026-2036 time-period.

Figure 2: Baseline Summary	
Category	**Cost ($)**
Capital	6,571,683
Maintenance	4,557,014
Fuel	5,748,000
Total	**16,876,696**

Alternatively, the EV transition scenario would result in total costs incurred during the EV transition period of approximately $20.15 million as per figure 3 below. This is approximately $3.27 million higher than the $16.88M transition period costs exhibited under the baseline scenario. This is due to the higher capital cost of EVs without all the future savings on fuel and maintenance being exhibited during the transition period.

Figure 3: EV Transition Summary	
Category	**Cost ($)**
Capital	13,550,355
EV Maintenance	1,604,387
ICE Maintenance	1,626,900
Charger Maintenance	184,792
EV Fuel	1,188,693
ICE Fuel	1,995,087
Total	**20,150,213**

Lifecycle Costs

The appended plan presents the NPV of associated costs for ICE and EVs in each vehicle category and are delineated by cost type. Some vehicle categories present a positive individual NPV. Those categories are full-size vans, ½ ton pickups and the ice resurfacing fleet. The NPV analysis suggests a relative savings of 6.9%, 13.3% and 13.2% respectively for these categories. The NPV suggests that the transition to EVs in the sedan, S.U.V. and minivan categories are 19.7%, 6.8% and 2.3% more expensive over the life of the vehicle. This is largely attributable to the lower use of these vehicles resulting in less fuel savings. Additionally, the EV capital cost is proportionately higher in these categories.

However, the results inclusive of all categories of light duty and ice resurfacing equipment indicate that high upfront costs can be overcome by maintenance and fuel savings for the proposed EV transition scenario. Overall, the EV transition scenario would result in a NPV savings of $1.6M or 9.1% in all vehicle categories.

The financial analysis only considers the direct financial impact to the City. There is no attempt to monetize the indirect cost savings associated with the public benefit of indoor air quality (ice resurfacing) and/or

reduced greenhouse gas (GHG) emissions.

Further, the analysis does not consider the potential of capital costs being partially funded by grant or incentive funding. There are potential funding sources for both EV purchases and associated charging infrastructure. Successful applications to these potential funding opportunities (FCM Green Municipal Fund or iZEV) will affect the results of the financial analysis. As of the date of this plan, the Incentives for Zero-Emission Vehicles (iZEV) Program funds have been fully committed. Consequently, the iZEV Program has now officially been paused.

Emission Reductions

Estimated annual GHG reductions (tonnes) are displayed in Figure 4 below. The result of a conversion to an EV fleet saves approximately 93% of the GHG emission when compared to the conventional ICE vehicles. Upon conversion of all in scope vehicles the annual total GHG reductions will be approximately 620 tonnes annually.

Figure 4: Annual GHG Reduction in Tonnes by Vehicle Category

	Sedan	SUV	Minivan	Full Size Van	1/2 Ton Pickup	Zamboni	TOTAL
Annual Reduction	1.8	2.5	3.6	4.6	4.9	4.9	22.4
Vehicle Count	7.0	21.0	15.0	16.0	71.0	16.0	
Total Annual Reduction	12.8	52.9	54.6	73.3	349.7	77.8	621

Project Risks and Mitigation Strategies

A series of risks and potential mitigation strategies are included in the Fleet Electrification Plan appended to this report. However, there are also some broad political risks that have limited potential to be mitigated and may have long term effects on the electrification transition plan. These are also identified in the appended electrification plan.

Other Initiatives and Alternatives to Reduce Emissions

The scope of the appended plan does not include fleet beyond the light-duty and ice resurfacing fleet as there has not been a viable alternative identified. Staff are reviewing and undertaking alternatives that may lead to reduced GHG emissions. These alternatives along with the status are listed below.

Increase the Use of Biodiesel

Biodiesel is a renewable fuel made from a variety of natural oils and fats such as soybean oil, canola oil, and recycled cooking grease. It is considered a more sustainable fuel source compared to regular diesel due to the materials used in production and its cleaner emissions. However, because of biodiesel's different chemical composition, it does not perform as well as regular diesel so it cannot be considered a full replacement. Additionally, its performance is affected by temperature and is not suitable outside of summer months and the closely abutting shoulder months.

Currently, a biodiesel blend consisting of 5% biodiesel is utilized by the City for approximately 5 months (May-September) of the year. Staff are in discussions with the City's fuel supplier to understand the potential of increasing the percentage of biodiesel for this period from 5% to 10 or 15%.

HYGN Pilot Project

HYGN Energy Inc. is an Ontario-based company delivering hydrogen hybrid retrofit units. Connecting to the vehicles electrical system, these units create and add hydrogen to the air intake of the vehicle. HYGN claims to improve combustion resulting in up to 20% fuel savings and up to 75% emissions reductions, helping

fleets decarbonize today while extending the life of their assets.

The City has undertaken a one- year pilot program to test the HYGN units for compatibility and benefit confirmation. The City has installed HYGN units on three vehicles – transit bus, garbage packer and a dump truck. The three units were installed from mid-April to June. Monthly testing is performed to measure exhaust gases and fuel consumption is being tracked. To date, results include reductions of 40-70% in emissions of carbon monoxide (CO), nitrogen oxide (Nox) and particulate matter. However, there has not been evidence of a significant reduction in fuel consumption to date.

Staff will continue with the pilot project for a full year and provide full results of testing and a recommendation upon completion.

Anti-Idling Campaign

Staff initiated an anti-idling campaign in the winter/spring of 2025. Actions included the installation of anti-idling stickers on City vehicles, along with internal and a broader public communication effort. Staff will continue to promote anti-idling internally and periodically on a broader public scale.

Right-Size Vehicles

Staff continue to search for opportunities to right-size the City fleet. As vehicles are due for replacement, staff determine based on operational needs the minimal size of vehicle that is required. Staff have had success in identifying some units that have been replaced with smaller, more fuel-efficient vehicles. Additionally, other potential units have been identified that could be piloted as smaller units.

Reduce Fleet Size

Biennially staff identify and consider a small list of low-use vehicles. This process has identified 11 units that have been eliminated since 2017. Staff will continue to identify low-utilization fleet and work with operating divisions to reduce vehicle count where possible, without compromising service.

Conclusion

The transition to electric vehicles in the light-duty and ice resurfacing fleet can be an economical and an environmentally beneficial decision. Lifecylcle analysis indicates that a positive financial benefit can be achieved in a total transition of these fleet categories.

Staff recommend the conversion of all light-duty and ice resurfacing fleet to EV according to the appended Fleet Electrification Plan. This would result in a reduction to GHGs of approximately 621 tonnes annually and have a positive NPV of 9.1% or $1.6M. Additionally, this scenario is most aligned with the Low-Carbon Transportation Strategy of the CEEP and supports Council’s declaration of a climate change emergency.