Staff Report

Development Services Department *www.kitchener.ca*

REPORT TO:	**Planning and Strategic Initiatives Committee**
DATE OF MEETING:	**February 9, 2026**
SUBMITTED BY:	**Anna Marie Cipriani, Corporate Sustainability Officer, 519-783-8970** **Matthew Lynch, Director Fleet, 519-783-8013**
PREPARED BY:	**Fionnula Wade, Sustainability Advisor, 519-707-1464**
WARD(S) INVOLVED:	**All Ward(s)**
DATE OF REPORT:	**January 28, 2026**
REPORT NO.:	**DSD-2026-054**
SUBJECT:	**City of Kitchener Fleet Electrification Business Case**

RECOMMENDATION:

For Information

REPORT HIGHLIGHTS:

- This report demonstrates the business case for fleet electrification.
- Highlights of the business case to electrify include: **70% lower annual fuel costs, 73% lower annual maintenance costs, annual operational savings of approximately $5,087, 96% less annual GHG emissions, a cost premium payback of 5.26 years, improved user comfort, efficiency and convenience.**
- This report supports Cultivating a Green City Together: Focuses a sustainable path to a greener, healthier city; enhancing & protecting parks & natural environment while transitioning to a low-carbon future; supporting businesses & residents to make climate-positive choices.

BACKGROUND:

The business case that follows supports the implementation of Action #27 of the City of Kitchener's Corporate Climate Action Plan Pivot: Net-Zero, Kitchener's 2023-2026 Strategic Plan, and TransformWR, the region of Waterloo's Community Climate Action Plan. The City of Kitchener's Fleet is comprised of approximately 650 on and off-road vehicles and equipment (excluding small handheld equipment). Light duty vehicles are the most amenable vehicle type to electrify currently. The City of Kitchener fleet is comprised of 38% light duty, 20% medium duty, 12% heavy duty vehicles, and 30% equipment (2024). As of November 2025, there are 26 light duty battery electric vehicles (BEV) in operation, representing approximately 10% of light duty fleet vehicles, and 5.6% total City of Kitchener fleet vehicles (excluding equipment).

To prepare this business case staff analyzed vehicle data for two battery electric cargo vans and two internal combustion engine (ICE) cargo vans used for the same daily tasks by City employees over a 15-month period (June 2024–August 2025). Data collected was then applied to a forecasted 8-year lifecycle. The report that follows is the business case for fleet electrification.

REPORT:

Cost Considerations & Savings

To create a like-for-like comparison, the purchase price and operating costs of the vehicles have been indexed to ensure they reflect current values.

The City of Kitchener's replacement policy follows an 8-year lifecycle for both ICE vehicles and BEVs. Research indicates that while a battery's lifecycle is influenced by several factors including but not limited to climate, charging frequency, and operating state of charge, it is reasonable to assume that the average BEV battery will last longer than the vehicles anticipated lifetime, which in this case is 8 years. A 2025 analysis conducted by Geotab (a Canadian based fleet telematics provider) provides data to support this assumption. Kitchener's fleet transition is still in the early stages of implementation, so as the City's BEV fleet continues to age, battery maintenance and health will be monitored.

BEVs require a higher initial investment of approximately 34% compared to internal combustion engine vehicles. This initial premium is offset by substantially lower operating expenses. Over the 8-year replacement cycle, the BEV incurred 70% lower annual fuel costs and 73% lower annual maintenance costs, resulting in total savings of approximately $14K over the battery electric cargo vans 8-year lifecycle, demonstrating that despite the higher purchase price, BEVs are anticipated to provide a more cost-effective long term financial profile (see Figure 1).

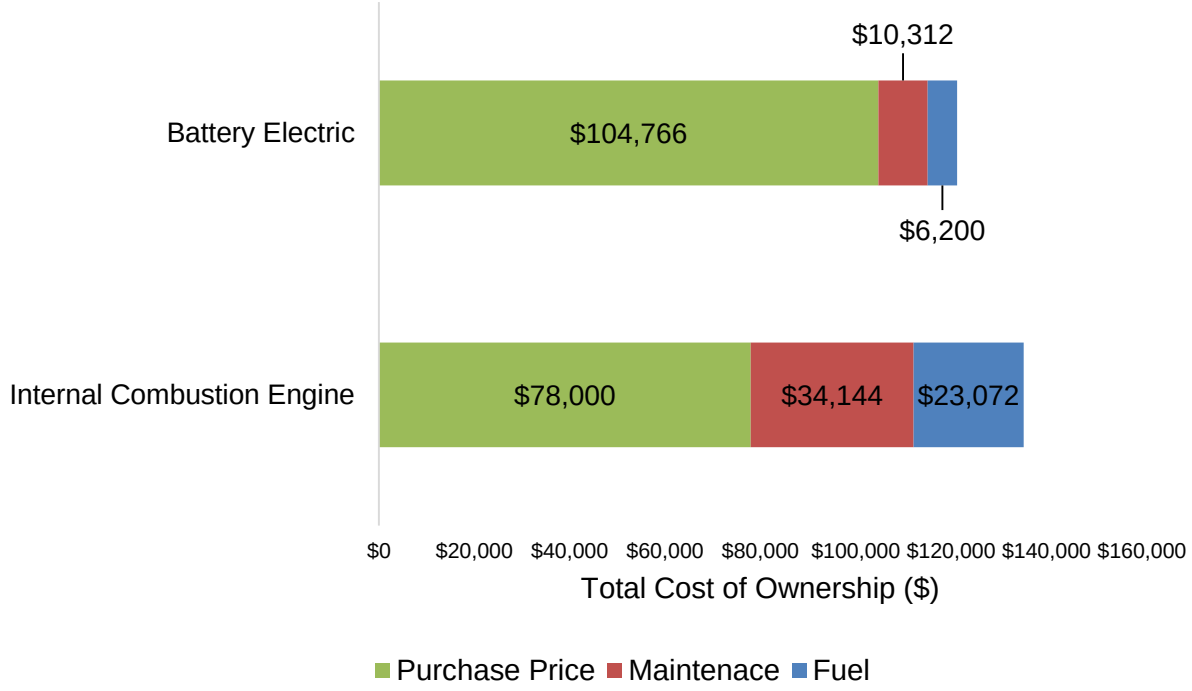

Figure 1. Total cost of ownership over an 8-year period for a battery electric cargo van (BEV) compared to an internal combustion engine cargo van.

Cost Premium Payback

In this analysis, the cost premium payback represents the number of years of operation required for the BEVs reduced fuel and maintenance costs to outweigh its higher purchase price relative to the ICE vehicles alternative. Figure 2 shows the cumulative costs of fuel and maintenance in addition to the purchase price for BEV and ICE cargo vans. The payback in this case is 5.26 years, meaning that after this point, the battery electric cargo vans should result in savings of approximately $5,087 annually. If a BEV continues to stay in operation beyond the anticipated 8-year lifespan, the associated savings are anticipated to continue to increase.

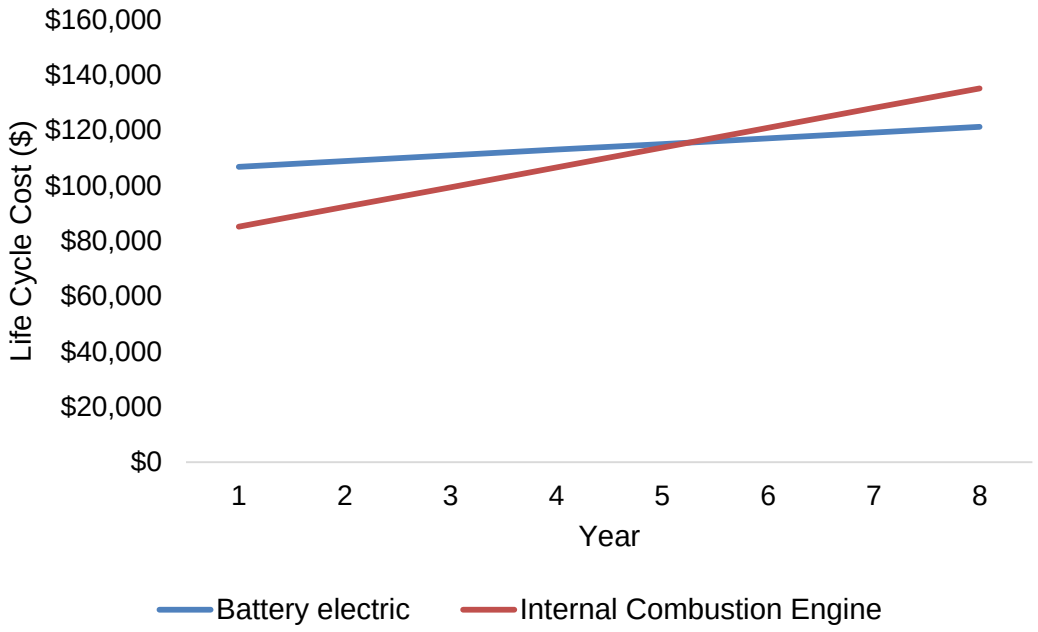

Figure 2. Cumulative lifecycle costs for battery electric and internal combustion engine cargo vans over an 8-year period, illustrating the cost premium payback at 5.26 years.

Greenhouse Gas Emissions

BEV replacements also come with a considerable decrease in GHG emissions. When comparing the 2 BEVs and ICE vehicles used by City of Kitchener employees between June 2024 to August 2025, the battery electric cargo vans used approximately 5.9 tonnes of CO_2 equivalents (tCO_2e) (5,900 $kgCO_2e$) less than the ICE equivalent, which is approximately 96% less GHG emissions (see Figure 3). This is largely due to the difference in carbon intensity associated with the different fuel sources. Gasoline has a much higher emission intensity (2.32 $kgCO_2e/L$) compared to electricity in Ontario (0.03 $kgCO_2e/kWh$). The transition to battery electric vehicles eliminates tailpipe emissions, delivering a significant improvement in local air quality while reducing unnecessary idling. These benefits not only support the City's climate change mitigation objectives but also enhance operational efficiency. Additionally, prolonged idling in ICE vehicles has been linked to decreased engine life and performance which can increase maintenance needs however this is not the case for BEVs.

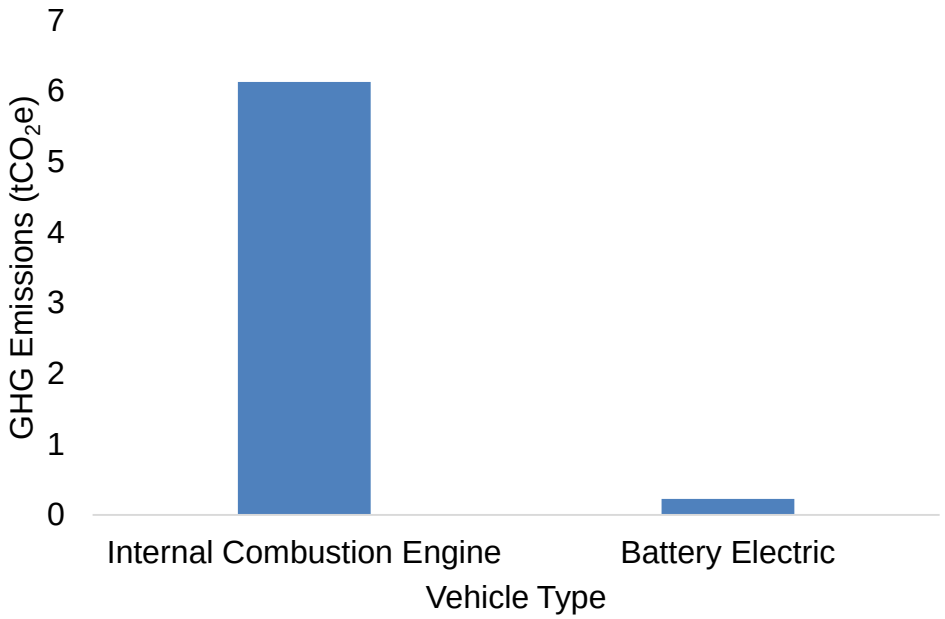

Figure 3. Average GHG emissions for ICE cargo vans and BEV cargo vans from June 2024 to August 2025.

Embodied Carbon

Both ICE vehicles and BEVs have GHG emissions associated with manufacturing, often referred to as embodied carbon. Calculating embodied carbon depends on several factors including vehicle make, model, year, and location of manufacturing. This business case did not include a comparison of carbon from vehicle manufacturing. However, a research study (2021) conducted by the International Council on Clean Transportation (an independent, nonprofit research organization) concluded that while BEVs have higher upfront emissions due to the manufacturing of the battery, compared to ICE vehicles, the total life cycle emissions for a BEV are still significantly lower than that of an ICE vehicle.

User Experience

Positive Observations

Staff who operate battery electric vehicles daily have provided favorable feedback, noting the following benefits:

- **Climate Control Efficiency/Comfort:** Staff have noted that the battery electric cargo vans tend to respond quicker to cooling and heating during both summer and winter months. This efficiency allows for enhanced comfort during extreme weather conditions without prolonged idling.

- **Improved Traction:** BEVs demonstrate superior road traction in wet and icy conditions compared to previous internal combustion engine vehicle models. This is because BEVs are heavier than their ICE equivalents.

- **Operational Convenience:** Eliminates the need for refueling; staff find it more efficient to simply plug in the vehicle at the end of the day.

Challenge
Despite the overall positive experience, staff reported a few drawbacks:

- **Maintenance Variable:** BEV battery cell maintenance can be hard to predict, and costly. A full battery cell replacement outside of warranty can sometimes equal the depreciated value of the vehicle. In this case study, the application requires the units to be charged daily to meet the operational needs of the work team. We continue to monitor how this will affect the cell life of the BEV battery.

- **Application Alignment:** Fleet has worked closely with user groups to identify when and where BEVs can be implemented. This small sample size is continuing to be reviewed for functionality, over the lifecycle of the vehicles.

- **Reduced Winter Range:** Older BEV models exhibit lower range in cold conditions (approximately 100 km less). Although only one incident of range depletion occurred in the past two years, this limitation can cause range anxiety. Fleet management is addressing this by procuring vehicles with larger battery capacities.

Conclusion
Transitioning from internal combustion engine vehicles to battery electric vehicles offers clear environmental and financial benefits for the City of Kitchener. BEVs deliver a sustained reduction in greenhouse gas emissions—approximately 96% lower than ICE equivalents — supporting the City's climate action goals and improving local air quality. While the initial purchase price of BEVs is higher, this cost is offset by significantly lower maintenance and fuel expenses, resulting in a favorable cost of ownership and a payback period of just under five and a half years. Operational feedback from staff highlights improved comfort, efficiency, and convenience, reinforcing the practical advantages of electrification. As vehicle technology continues to advance and charging infrastructure expands, replacing ICE vehicles with BEVs, where operationally feasible, aligns with both sustainability objectives and long-term fiscal responsibility, making electrification a strategic and forward-looking choice for municipal fleet management. The transition to battery electric vehicles depends on several factors including the job function associated with each vehicle. This business case will inform the development of the City of Kitchener's Sustainable Fleet Transition Strategy anticipated Q4 2026.

STRATEGIC PLAN ALIGNMENT:

This report supports **Cultivating a Green City Together: Focuses a sustainable path to a greener, healthier city; enhancing & protecting parks & natural environment while transitioning to a low-carbon future; supporting businesses & residents to make climate-positive choices.**

FINANCIAL IMPLICATIONS:

Capital Budget – The recommendation has no impact on the Capital Budget.

Operating Budget – The recommendation has no impact on the Operating Budget.

COMMUNITY ENGAGEMENT:

INFORM – This report has been posted to the City's website with the agenda in advance of the council / committee meeting.

INFORM –Attachment A includes a one-page shareable business case summary document.

PREVIOUS REPORTS/AUTHORITIES:

There are no previous reports/authorities related to this matter.

APPROVED BY: Justin Readman, General Manager Development Services
Denise McGoldrick, General Manager Infrastructure Services

ATTACHMENTS:

Attachment A – One Page Summary: Fleet Electrification Business Case