



SUBJECT: EICS-08-23 Electric Mobility Update

TO: Environment, Infrastructure & Community Services Cttee.

FROM: Environment and Energy

Report Number: EICS-08-23

Wards Affected: all

File Numbers: 210-09

Date to Committee: June 28, 2023

Date to Council: July 11, 2023

Recommendation:

Receive and file environment, infrastructure and community services report EICS-08-23 regarding an Electric Mobility update.

PURPOSE:

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth
- Support sustainable infrastructure and a resilient environment
- Deliver customer centric services with a focus on efficiency and technology transformation

The purpose of this report is to provide an update on actions to support the transition to electric mobility in city operations and the Burlington community.

Background and Discussion:

Electric mobility is identified as a key program area in the [Climate Action Plan](#) to support Burlington becoming a net carbon zero community by 2050. City staff worked in partnership with [BurlingtonGreen](#) to complete an [Electric Mobility Strategy](#), presented to Council in September 2022 (EICS-16-22), supported by input and feedback from community and industry stakeholders. The [Corporate Energy and Emissions Management Plan](#) also identifies greening the city's fleet as a key action to help meet the target for city operations to be net carbon neutral by 2040. This report provides

highlights of the City's electric mobility actions under the four themes of the Electric Mobility Strategy.

Theme 1: Charging Infrastructure and Grid Capacity

- **Electric Vehicle Charging Stations (public)**

There are currently 22 level two charging stations (43 charging heads in total) located on city property, primarily in the downtown core parking lots. Most are available to the public although some may be restricted to charging after city working hours during the week. An additional 18 charging stations (36 charging heads) are in progress supported with funding from either The Atmospheric Fund or Natural Resources Canada. Most of the new charging stations will be distributed among many of the city's recreational facilities, providing access to charging across the community. A level three (fast) charger is planned to be installed and operational in lot 5b (by the downtown Burlington Transit Terminal) in 2023. (See Appendix A for a full list of current and planned charging stations on City property.)

According to the Charge Hub website, there are 114 public charging station ports in Burlington in total, including the city's charging stations. Note that it is not clear how often the data is updated on their website as it has not changed since 2022 when staff originally reported on the Electric Mobility Strategy.

- **Charging a Fee**

Council has supported free charging at city owned EV (electric vehicle) charging stations as an incentive to transition to electric mobility in Burlington. However, the installation of a level three (fast) charger consumes more energy than a level two charger. Staff plan to monitor usage of the fast charger during the first six months of its operation and assess potential options to introduce a fee for this station in the future. As staff from Peel Region noted, not charging a fee is a disincentive for the private sector to install and offer fast charger stations as they cannot compete with the free charging offered by the city.

The majority of the city's chargers are level 2 chargers. Free charging has been available since the installation of public chargers to incent the adoption of electric vehicles. As an incentive to ensure EV owners do not overstay their charging time, staff will also assess options on implementing a fee for vehicles that remain plugged in beyond the four-hour limit. Although the city can issue a ticket under its parking bylaw for EV drivers blocking an EV charging station beyond the four-hour limit, adding a fee for time plugged in beyond the four-hour limit provides an additional incentive for drivers to move their vehicles. The assessment will look at potential impacts of introducing an overcharging fee, municipal practices and how city vehicles can be accommodated.

- **Grid Capacity**

As requested by Council in 2022 (Report EICS-04-2022), Burlington Hydro is reviewing the potential impacts to the grid related to electrification of vehicles, thermal energy (air source heat pumps), renewable energy, as well as other climate impacts to plan and prepare for future grid capacity and resiliency. A report is scheduled for the second quarter of 2024.

- **EV Ready Requirements for New Development**

The city has voluntary guidelines for new development in the Sustainable Building and Development Guidelines. EV Ready requirements will be considered through the new zoning by-law project.

Theme 2: City Leadership

- **Greening the City Fleet**

Sixteen percent of the corporate fleet consists of battery electric (17) and hybrid/plug-in hybrid (19) vehicles (excluding Fire and Transit). In addition, 15 percent of utility vehicles/gators are low emission vehicles. Twenty nine percent of the Fire Department's fleet consists of Hybrid/Plug-in Hybrid (11) vehicles. Further details and plans to green the city's fleet will be provided during the presentation of the Green Fleet Strategy later in 2023.

- **Burlington Transit Zero Emission Bus Study**

Burlington continues to work with CUTRIC (CUTRIC Urban Transit Research and Innovation Consortium) in developing a zero-emission bus roll out plan. This plan will include the purchase of four electric buses through a joint procurement initiative, which is being led by CUTRIC. The pilot will provide Burlington Transit staff to better understand the impact of electrification on transit routes, running times, operational savings, optimal locations of on-street charging and overall performance.

A key component of the electric bus project will be the implementation of on site charging infrastructure for zero emission buses (ZEB). The work with CUTRIC includes planning with Burlington Hydro to ensure grid capacity is available for zero emission bus charging.

- **EV Ready Requirements**

The Chief Building Official continues to have discussions with provincial staff to encourage re-instating EV ready requirements/standards for new developments to avoid costly and potentially un-safe future retrofits. Grid capacity has been raised as a concern by provincial staff.

Theme 3: Education and Awareness

- **Green Fleet Branding**

Green city fleet vehicles are branded with a leaf to illustrate that they are low or zero emission vehicles.

- **Electric Mobility Events**

In 2022 the city and Burlington Hydro partnered to sponsor a month-long event for Burlington residents to test drive electric vehicles. In 2023, Sustainability Leadership hosted an electric mobility showcase event with opportunities for test drives at their Sustainability Leadership Awards event. Staff are in discussions with BurlingtonGreen and Plug'n Drive to host a public EV test drive event in the fall to continue raising awareness about the benefits of electric vehicles.

Theme 4: Equity and Accessibility

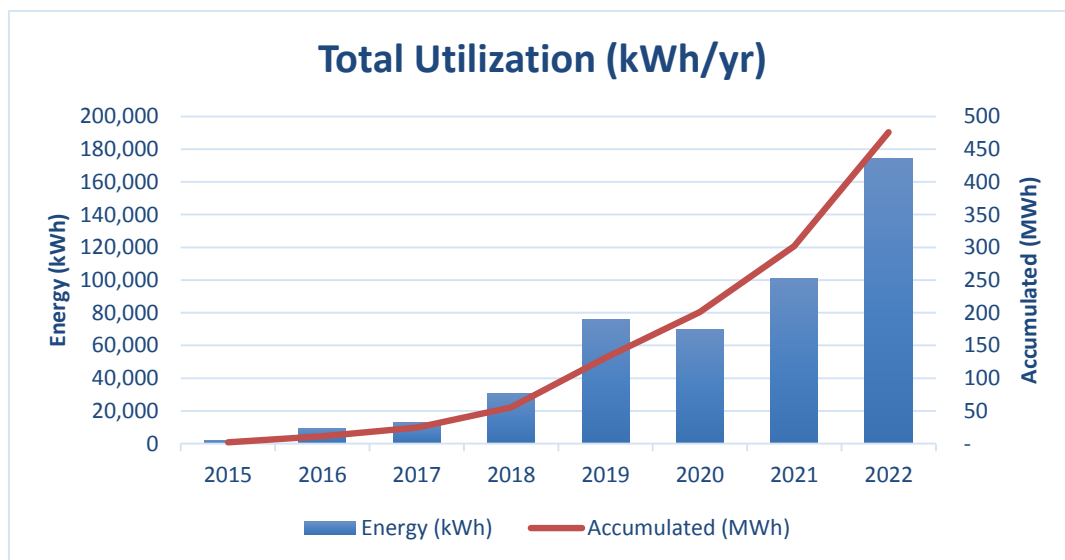
- **Accessibility**

Standards are being developed for future charging stations to ensure that they are accessible for all users.

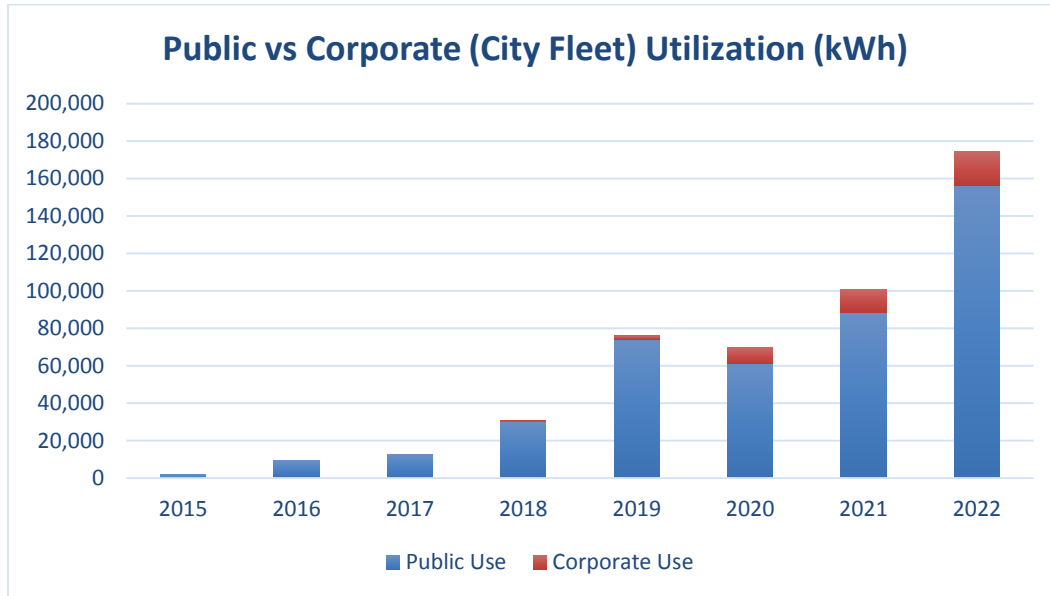
Monitoring and Evaluation

EV Charging Update

The following Energy Utilization data includes all city owned chargers except for three that are not connected to the city's ChargePoint network. Staff will investigate data collection from these sites through other means.

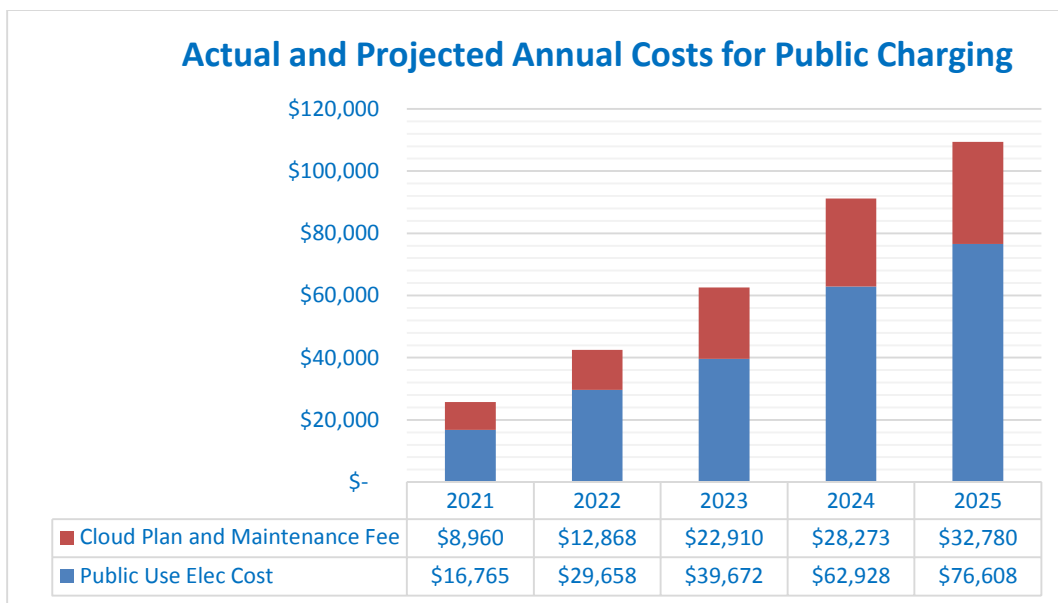


City owned chargers saw a considerable increase in utilization from 2021 to 2022 by approximately 73%.



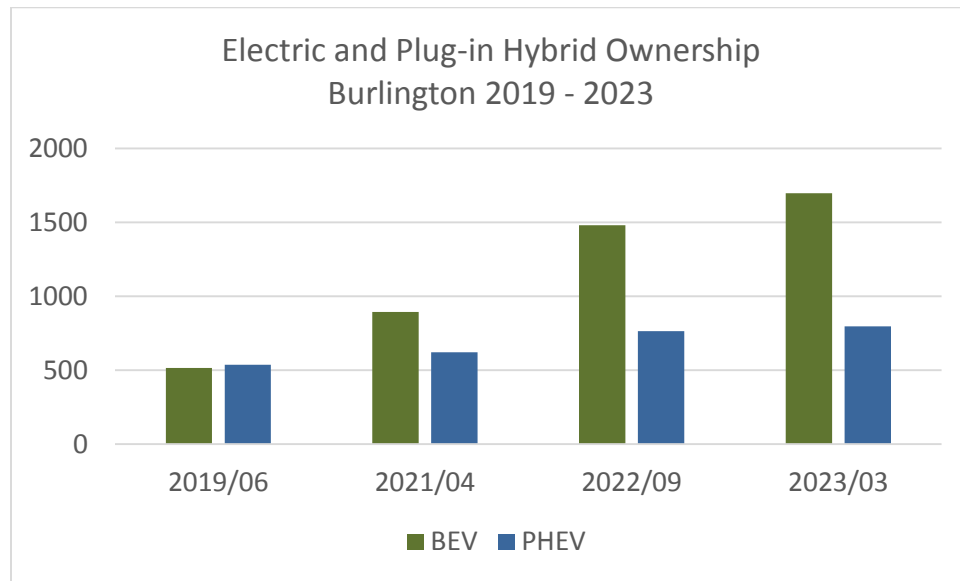
Several of the city’s chargers are available only for corporate (city owned) fleet use. Corporate utilization continues to grow as the number of corporate fleet PHEV (plug-in hybrid electric vehicle) and BEV (battery electric vehicle) assets increase. The bulk of the increased charging can be attributed to increased use by the public.

As the city continues to increase EV charging infrastructure on city property to meet increasing demand, consideration must be given to the resources and costs required to administer, operate and monitor this infrastructure. The graph below provides actual operating costs as well as projected EV Charging operating costs including, station admin fees and utility costs as well as an allowance for breakdowns and repairs.



Staff recommend that following the installation of the next 18 charging stations (36 ports) on city property, future expansion be paused (unless specifically required for city fleet vehicles) to assess usage and demand. This will enable staff to determine whether supply is meeting demand for charging opportunities, by location, to assess whether additional charging capacity is required.

Electric Vehicle Ownership – Burlington



Source: Government of Ontario website (<https://stage.data.ontario.ca/dataset/electric-vehicles-in-ontario-by-forward-sortation-area>)

BEV = Battery Electric Vehicle and PHEV = Plug-in Hybrid Electric Vehicle

The above chart shows the growth in ownership of low and zero emission vehicles in Burlington since 2013, particularly full battery electric vehicles. Ownership of full battery electric vehicles has increased by over 300 per cent since 2019 whereas, plug-in hybrid vehicle ownership has experienced a fifty per cent increase during the same time period.

Strategy/process/risk

Responsibility for EV charging stations has been centralized under Environment, Infrastructure and Community Services, specifically Energy staff. This is meant to ensure efficiencies and improve customer service on the operations of EV charging stations. Staff from various departments were engaged in preparing this report, including EICS; Roads, Parks and Forestry; Fire; Transit; and Community Planning.

A risk that has been identified by staff are supply chain issues, particularly for parts to repair existing chargers as well as for new electric vehicles.

Options Considered

Electric mobility is identified as a key program area to achieve a significant reduction in carbon from the transportation sector.

Following the installation of the newest public facing chargers, staff will monitor usage to identify areas of high demand to determine whether future expansion is required. Staff will also monitor private sector installation of public facing charging stations which may also have an impact on whether there is a need to expand the city's charging inventory.

Financial Matters:

The city will be receiving a grant from The Atmospheric Fund (TAF) to install 16 level two charging ports at community facilities, which is expected to be complete at the end of August 2023. The approved total project budget is \$344,689. At project completion, TAF will reimburse the city up to \$80,000. The funding sources include:

- MB0287 – EV Charging Stations – Corporate – TAF (\$344,689)
 - Capital Purposes Reserve Fund - \$344,689 (up to \$80,000 to be reimbursed from TAF)

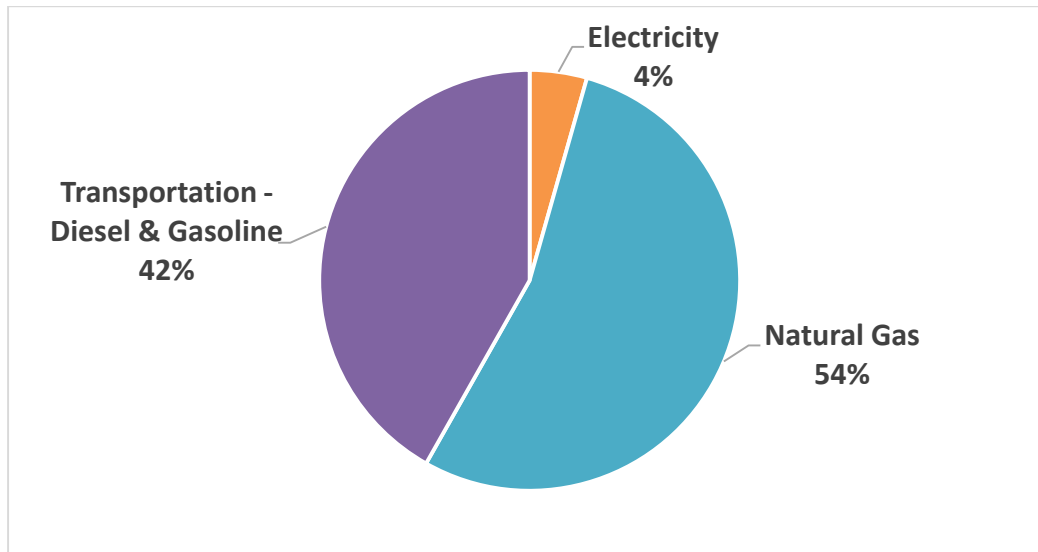
The city also has a funding agreement with Natural Resources Canada (NRCan) to install 24 charging ports including two fast chargers downtown. NRCan is contributing up to \$140,000 and the city is contributing \$231,000 for the project. The funding sources include:

- MB0286 – EV Charging Stations – Corporate – NRCan (\$180,000)
 - Capital Purposes Reserve Fund - \$80,000
 - NRCan - \$100,000
 - PK0032 – EV Charging – Lots 8 and 5b – NRCan (\$191,000)
 - Parking District Reserve Fund - \$151,000
 - NRCan - \$40,000
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Climate Implications:

Emissions from the transportation sector (based on fuel sales) represent over 40% of the community emissions in Burlington. Supporting electric mobility will help to reduce emissions from this sector.

2021 Community Emissions by Source as a Percentage



[Google's Environmental Insights Explorer](#) estimated that Burlington's community-based greenhouse gas emissions from the transportation sector in 2021 were 594,000 tonnes of carbon dioxide (equivalent), representing an increase of 14% from 2020. However, in comparison, calculating emissions from fuel sales as an indicator showed that emissions increased only by four percent between 2020 and 2021.

Engagement Matters:

Sustainability staff will work with community partners, such as [BurlingtonGreen](#) to continue to engage the Burlington community on the benefits of electric mobility. A one-day event is being planned in the fall in partnership with [Plug'n Drive](#). Staff will discuss potential collaboration opportunities related to electric mobility with the Halton Municipal Climate Team (consists of environment/sustainability staff from the four local municipalities and Halton Region).

Conclusion:

Transitioning to electric mobility will help the city to achieve its goals for city operations to be net carbon neutral by 2040 and the community to be net carbon neutral by 2050.

Respectfully submitted,

Lynn Robichaud
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Appendices:

- A. City of Burlington EV Chargers

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.