SUBJECT: Electric Vehicle Charging Update and Analysis

TO: Environment, Infrastructure & Community Services Cttee.

FROM: Environment, Infrastructure and Community Services

Report Number: EICS-01-21

Wards Affected: All

File Numbers: 210-01

Date to Committee: February 4, 2021

Date to Council: February 16, 2021

Recommendation:

Receive and file environment, infrastructure and community services report EICS-01-21 providing electric vehicle charging update and analysis; and
Direct the Executive Director of Environment, Infrastructure and Community Services to develop a policy to guide the expansion, operation and maintenance of electric vehicle charging infrastructure on city property.

PURPOSE:

Vision to Focus Alignment:

- Support sustainable infrastructure and a resilient environment
- Deliver customer centric services with a focus on efficiency and technology transformation

Background and Discussion:

The need to electrify transportation has been identified as a vital action in both the City's Climate Action Plan and Corporate Energy and Emissions Management Plan.

The City installed its first public access electric vehicle (EV) charging station in 2015 in the downtown parking garage and has expanded its portfolio each year with the largest installation being in 2018 with the addition of 12 dual head stations partially funded under the province's Workplace Electric Vehicle Charging Incentive Program.

The City of Burlington currently has 23 Electric Vehicle (EV) charging stations on city property with a total of 44 charging heads. The majority of these units can be found in downtown parking lots.

There are three types of charging stations available for use, Level 1, Level 2 and Level 3.

- **Level 1** stations would be a charger that would come with an electric vehicle when purchased and plug into a standard 120 volt, 15 amp wall outlet. Charging times at these stations vary with vehicle and charger but will typically charge 200km in approximately 20 hours.
- **Level 2** stations are stations like the city currently has installed in its parking lots. These are stations with 1 or 2 charging heads using 240 volts and either 40 or 50 amps. Typical charge time at these stations is 200km in approximately 5 hours.
- **Level 3** stations or “Fast Chargers” operate at direct current (DC) voltage, sometimes as high as 800 volts, and can charge a vehicle 160km in approximately 30 minutes.

Currently all City of Burlington chargers are Level 2 chargers.

In 2020 additional stations were installed for city operated fleet vehicles at Fire Station Headquarters, Roads, Parks and Forestry Operations Centre and the Burlington Animal Shelter.

Many of the City’s charging stations are accessible to the public however there are some that are only available for corporate vehicles as noted above. Below is a table of the currently installed 23 charging stations, locations and accessibility.

Station Location	Number of Charging Heads	Public Access	Corporate Only Access	Corporate and Public Access
RPF Headquarters	2			x
RPF Headquarters	6		x	
Parking Lot 10 – 1371 Elgin St	2			x
Parking Lot 7 – 500 Locust St	2			x
Parking Lot 6 – 430 Brock	2			x
Parking Lot 5 – 391 Brant St	2			x
Parking Lot 4 – 421 John St	2			x
Parking Lot 3 – 533 John St	2			x
Parking Lot 2 – 466 Burlington Ave	2			x

Station Location	Number of Charging Heads	Public Access	Corporate Only Access	Corporate and Public Access
Parking Garage – Level 6A	8			x
Parking Garage – Level 1A	4	x		
Fire Station 1	4			x
Burlington Animal Shelter	1		x	
Parking Services Facility – 1376 Elgin	2		x	
City Hall Parking Lot	2		x	
City Hall Parking Lot	1	x		

In 2020, funds from the Parking District reserve were allocated to install 3 additional EV charging stations in City owned parking lots namely in lots 1, 8 and one level three EV charger in a lot in close proximity to Brant Street. Due to the reassignment of Parking Services staff and other additional unexpected work assignments, the EV chargers were not installed in 2020. This work is expected to be carried out in 2021.

During budget discussions at the January 12, 2021 Corporate Services, Strategy, Risk and Accountability Committee, staff were directed to provide further information on the Parking District reserve fund specifically related to how the fund is broken down and funded.

The Parking District reserve fund was set up for funding capital improvements to city owned parking facilities within the downtown as well as funding in years with operating shortfalls. Since the one reserve fund model did not sufficiently differentiate the use of funds, in June 2020 council approved the creation of three separate and distinct reserve funds to ensure the most efficient use of the balance by clearly distinguishing funds for stabilization of operations, lifecycle costing for all parking assets (renewal) and future growth in parking supply.

As of September 30, 2020 the existing Parking District reserve fund has a balance of $9,566,345. Based on a financial model the balance is being allocated amongst the three newly created reserve funds as follows:

Parking Renewal - $2.5 million reflects the city's parking asset inventory and required needs
Stabilization of Operations - $0.2 million this balance reflects a target of 10-15% (3 year rolling average) of operating revenues for the purposes of stabilization of operations
Parking Growth - $6.9 million to reflect the anticipated growth in parking demand

The above allocation and overall balances are subject to change based on final 2020 year end close, and will be adjusted accordingly as required.

The budget for the Parking District funds the annual operating expenses while also providing a provision to the reserve funds. Budgeted expenses total $2,651,106 including a budgeted provision to the reserve funds of $1,412,477.

The revenues (and associated percentages) that support the total expenses and provision to the reserve fund are as follows:
- **property tax levy** against the business properties of $304,200 plus a payment in lieu for exempt/partially exempt city properties of $39,327 for a total of $343,527 (13.0%)
- **parking fines** of $470,000 (17.7%)
- **parking fee revenues** of $1,838,546 (69.3%)

Staff believe that it is appropriate to use the Parking District funds to cover the costs of EV chargers for city owned parking facilities in downtown Burlington.

City staff are also currently working on the installation of 11 additional dual head charging stations for spring 2021 that will be accessible to the public. These stations are being installed as part of the council directed budget addition in the 2020 capital budget. Charging stations will be installed at the following city facilities;

- Tansley Woods Community Centre (4 heads)
- Appleby Ice Centre (4 heads)
- Central Park Campus (4 heads)
- Mountainside Recreation Centre (2 heads)
- Haber Recreation Centre / Norton Park (2 heads)
- Nelson Recreation Centre (2 heads)
- Aldershot Arena (2 heads)
- Mountainside Recreation Centre (2 heads)

With the installation of these charging stations the City will have 33 charging stations installed with 26 of those being publicly accessible.

It is expected that additional stations will be installed in the coming years as part of the green fleet strategy for corporate vehicles.

Strategy/process

Detailed information on charging usage and times is available for 20 of the city's 23 chargers. Staff are currently working to secure a more accurate means of monitoring the other three charging stations.

Through the years the utilization of the publicly available charging stations increased annually with the installation of additional charging stations and increased awareness of the stations. However, an obvious dip can be seen in the graph below in March 2020 coinciding with the start of the COVID-19 Pandemic.

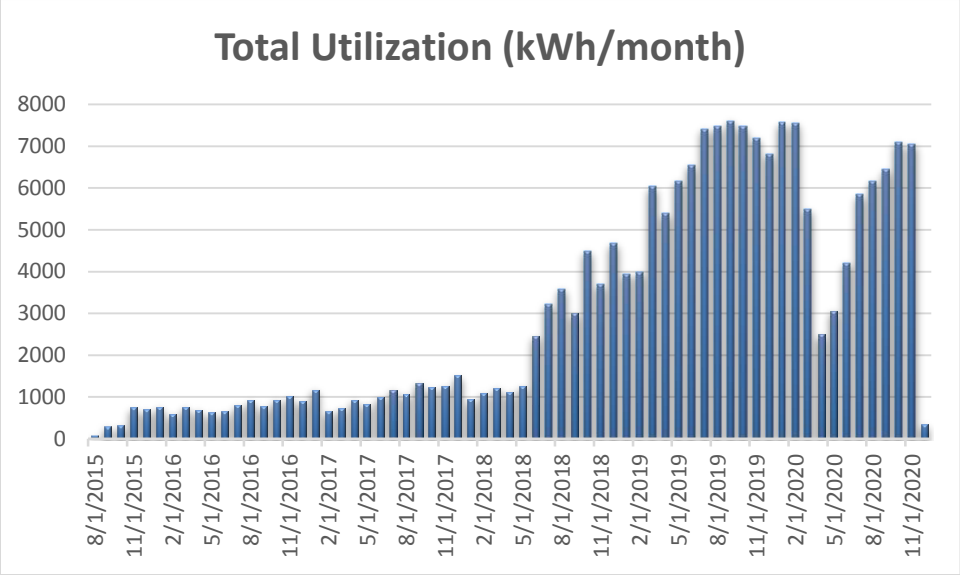


Figure 1

Currently staff are unable to differentiate between corporate vehicle charging and public vehicle charging rates at those stations which are shared. Data is available for city fleet vehicles utilizing those charging stations that are only for corporate use. As the corporate fleet continues to be electrified to reduce the corporate carbon footprint and work towards the net carbon neutral target for city operations by 2040, increased charging rates are expected along with an expansion of EV chargers.

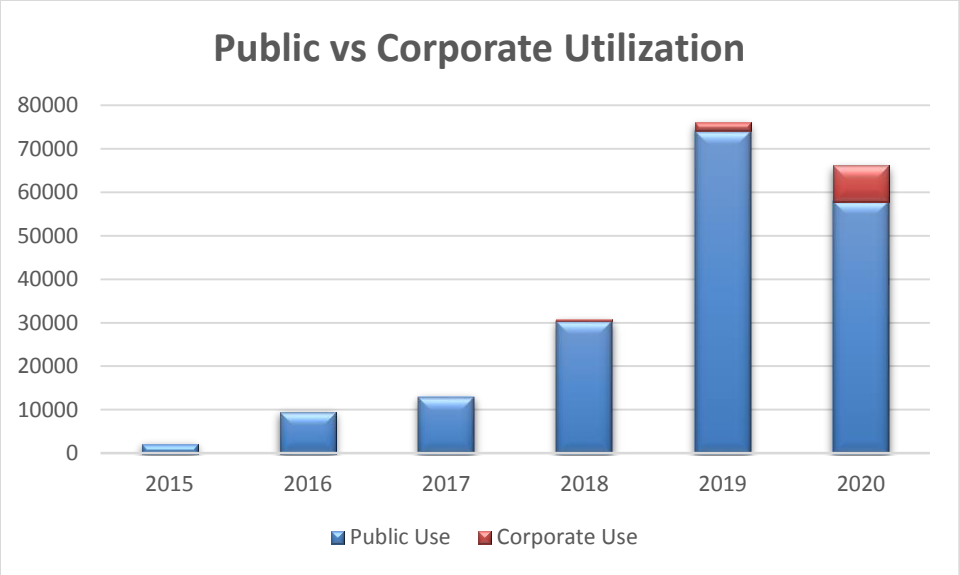


Figure 2

Since 2015 community awareness of the city's efforts has grown along with our portfolio of EV charging stations. Through our charging platform staff are able to identify how many "unique drivers" plug-in each year, meaning how many different drivers charged at our stations each year. Increased awareness and use of City stations is evident from 2018 to 2019 where the total number of chargers did not increase but the number of unique drivers increased significantly.

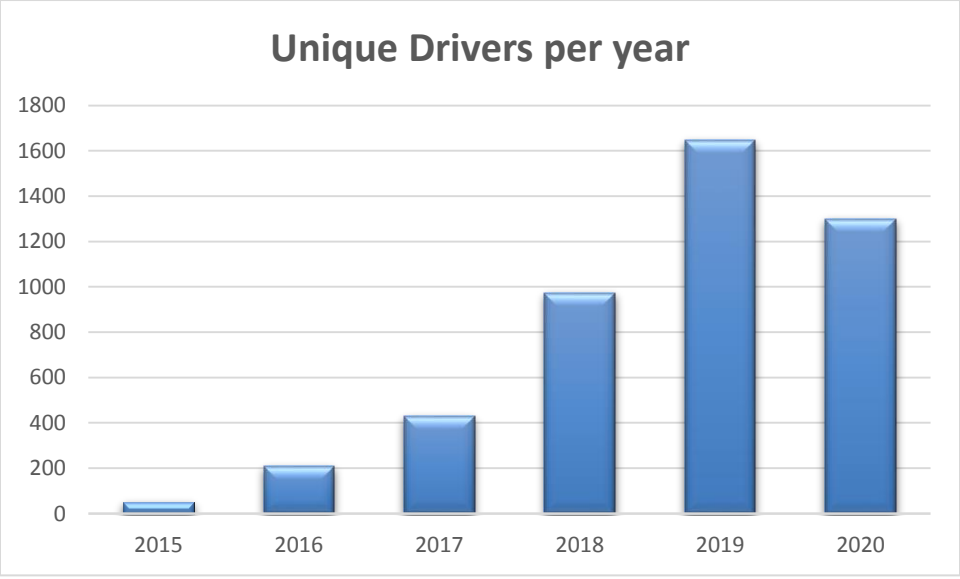


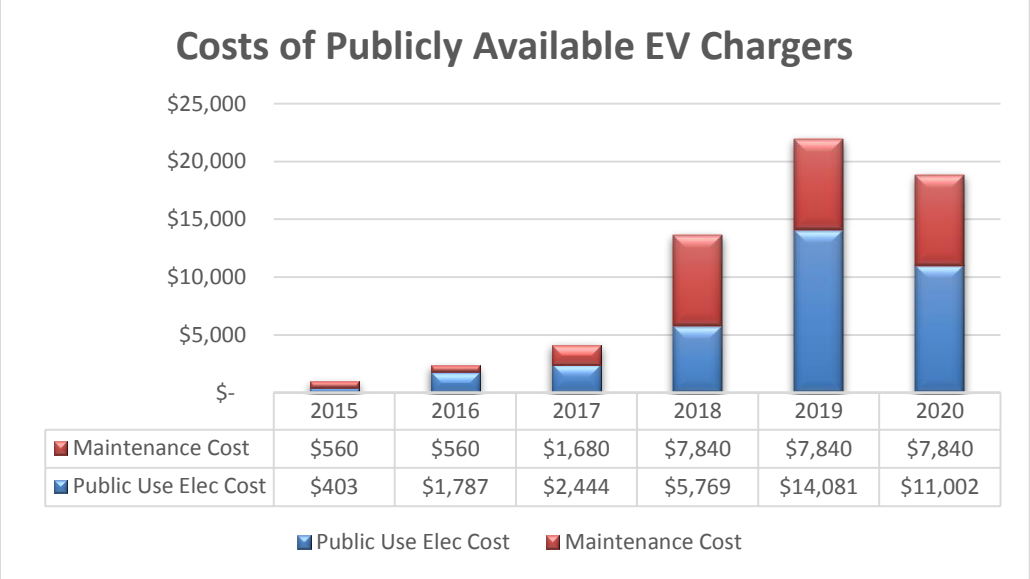
Figure 3

Options Considered

Other sustainable mobility options will be considered and assessed through the development of the Integrated Mobility Plan.

Financial Matters:

Currently there are no fees for using a city EV charger, however, electricity used for these stations carries an annual cost as does ongoing maintenance and programming/data access for the charging stations. The intent was to support and encourage members of the public and staff to consider a low or zero emission vehicle. Below are the costs associated with the charging stations available for public charging.



	2015	2016	2017	2018	2019	2020
Maintenance Cost	$560	$560	$1,680	$7,840	$7,840	$7,840
Public Use Elec Cost	$403	$1,787	$2,444	$5,769	$14,081	$11,002

Figure 4

Total Financial Impact

Annual costs of operating the EV charging stations vary as detailed above. These annual costs are expected to increase annually by an additional $20,000 to $39,000 (electricity cost plus operations/maintenance), depending on charging activity, with the installation of the additional 13 charging stations as part of the 2020 capital budget. These projected costs do not include the operational costs of the level three charging station that is to be installed in 2021 due to unknown charger specifications and utilization rates.

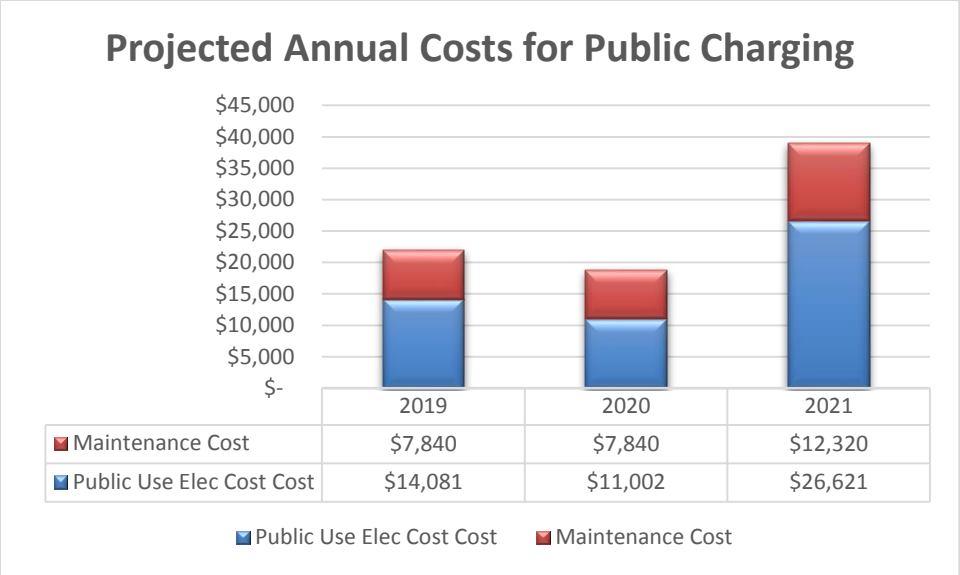


Figure 5

Source of Funding

As mentioned above currently the City does not charge staff or the public to use the chargers. However, due to the rising utilization of the City's charging stations and the general growth of the City's charging assets the addition of an hourly fee to our charging stations is necessary. The City is unable to charge directly for electricity consumption but can base the charge on an hourly rate to use the charging station.

A new policy regarding fees for EV Charging is recommended to be developed in 2021. This would include items such as fees for public users and staff users, charging time limits, introduction of a penalty fee if an overstay is detected, as well as how to direct the funds that are collected.

Currently the cost of electricity consumption at the charging stations are covered under operating budgets for electricity accounts for the various assets that house our charging infrastructure. Installation and ongoing maintenance fees have been covered through facility or parking asset operating budgets.

Other Resource Impacts

Not applicable

Climate Implications

By encouraging the use of electric vehicles in both our corporate fleet as well as by the public, the City of Burlington continues to show leadership in greenhouse gas reductions.

Below shows the estimated greenhouse gas saved each year since the first charging station installation.

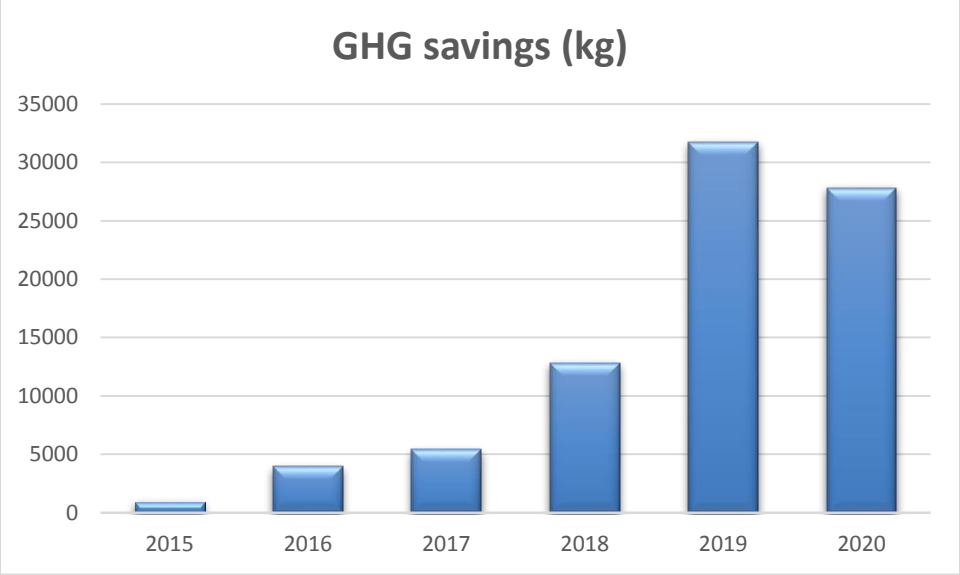


Figure 6

Since 2015 the city has helped residents and our own corporate fleet reduce emissions by approximately 82.5 tons, which is equivalent to the carbon sequestered by approximately 1356 seedlings grown for 10 years.

Engagement Matters:

City staff were consulted on this report included fleet management, parking management, transportation and sustainability staff, and finance. An engagement process will be developed and implemented to support the new EV Charging Station Policy in 2021.

Conclusion:

The City of Burlington continues to act as a leader among municipalities for EV Charging. The introduction of a new EV Charging policy will help to guide this program and provide direction for staff as they continue with new installations and promotion of

this city service. As our utilization rates and number of charging installations continue to grow the City shows its commitment to both the Climate Action Plan as well as its objectives to be both a net carbon neutral community and corporation.

Respectfully submitted,

Tom Pedlar

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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.