

Options for Permitting Private Installation of Electric Vehicle Charging Infrastructure on Public Streets

Date: April 19, 2023

To: Infrastructure and Environment

From: Executive Director, Environment and Climate Division

Wards: All

SUMMARY

This report provides additional information in response to City Council direction to report back on options, if any, for permitting private installation of electric vehicle (EV) charging infrastructure on public streets.

In Toronto, five (5) per cent of residents rely on residential on-street parking permits for parking their vehicles. This percentage of residents who don't have dedicated access to parking will also not have dedicated access to charging should they wish to acquire an electric vehicle. Commonly known in the EV industry as "garage orphans", these residents experience a challenge on one of the necessary pre-requisites to EV purchase and may be hesitant to embrace EV technology without private access to charging.

To date, the City's approach to meeting the needs of garage orphans has been to provide shared public charging access, via City-owned and operated public charging stations, on-street in some residential neighbourhoods, on-street in paid parking locations as well as in parking lots owned and managed by the Toronto Parking Authority (TPA). This is in addition to public charging available through other third parties, such as workplace charging.

This report considers two privately funded options that may meet the needs of garage orphans in the city but would result in some additional costs to the City due to the administration and oversight of the programs:

- Allowing the private purchase and permanent installation of privately owned charging stations located on-street in front of, or close to a resident's home
- Allowing "as needed" EV charging by running an electrical cord, covered with an accessible ramp, over the sidewalk to an on-street parking spot in front of a resident's home

Although on the surface, these two options seem to meet residents' immediate needs for charging, both options:

- create potential public safety risks, including potential physical accessibility issues on the sidewalk, requiring management by the City
- would incur costs which may be prohibitive to both the City and the resident
- would constrain the City's ability to effectively manage the right-of-way in the public interest
- would be inequitable by privileging only individuals who can afford to pay for the infrastructure a dedicated parking spot

It is therefore recommended that the two options discussed in this report not be considered by the City.

Understanding how to meet the urgent need for EV charging for garage orphans is key to achieving TransformTO's Net Zero Strategy goal of increasing the current share of all registered vehicles to 30% by the year 2030. Currently underway is the development of a long-term Public EV Charging Plan which will clearly define the role for the City, the private sector and other interested parties in supporting the required uptake of EVs.

It is expected that many more opportunities to meet the needs of garage orphans will be identified through the development of the Public EV Charging Plan including the use of existing parking assets that can be found in school parking lots, community centres and public library parking lots.

RECOMMENDATIONS

The Executive Director, Environment and Climate Division recommends that:

1. City Council receive this report for information.

FINANCIAL IMPACT

There are no financial impacts associated with the recommendation in this report.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial implications as identified in the Financial Impact section.

EQUITY IMPACT STATEMENT

The right-of-way, including curbside space, is a public resource and therefore should be equally available to all. The City of Toronto manages this resource in the public interest. Where there is public benefit, the City assigns curbside access to particular uses (e.g., designated on-street accessible parking, car share spots, or various forms of loading zones), but resulting regulations pertain to uses not individual people.

Allowing private individuals to install electric vehicle (EV) charging infrastructure adjacent to parking spaces on public streets would give these individuals either 1) exclusive access to this public space (if the charging infrastructure is to be dedicated for the private use of these individuals) or 2) the ability to determine how this public space is used (if the charging infrastructure is to be available for public use). Both cases are inequitable because residents who can afford to pay the cost of installing the EV charging infrastructure would enjoy publicly-provided benefits not available to other residents.

Moreover, individuals who install EV charging on public streets will expect dedicated or preferential access to adjacent parking spaces. This is currently not allowed and would require creation of a new kind of parking access limitation that would result in additional burden to the City for signage, markings and enforcement. It would also be contrary to the City's current approach for managing curbside access.

DECISION HISTORY

On March 3, 2023, a presentation was provided to the Board of Directors of Toronto Parking Authority on the 2023 On-Street Electric Vehicle Charging Station Program, which included details on current and planned future deployment of public EV charging infrastructure at on-street and off-street locations.

<https://www.toronto.ca/legdocs/mmis/2023/pa/bgrd/backgroundfile-234724.pdf>

On January 30, 2023, the Infrastructure and Environment Committee requested the Director, Environment and Energy, in collaboration with Transportation Services, Toronto Hydro, and the Toronto Parking Authority, to report back to the April 26, 2023 meeting of the Infrastructure and Environment Committee on options, if any, for permitting private installation of electric vehicle charging infrastructure on public streets, including any necessary conditions to protect the public interest.

<https://secure.toronto.ca/council/agenda-item.do?item=2023.IE1.12>

On June 15, 2022, City Council adopted the staff report "On-Street Electric Vehicle Charging Stations - Pilot Conclusion and Next Steps," which provided details on the pilot and noted that 32 additional on-street public EV charging stations will be installed in 2022. City Council directed the Toronto Parking Authority to work with the General Manager, Transportation Services, Toronto Hydro and relevant stakeholders to install a minimum of 50 on-street electric vehicle chargers by the end of 2023.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2022.IE30.11>

On December 15, 16 and 17, 2021, City Council endorsed the targets and actions outlined in the TransformTO Net Zero Strategy and approved a target to reach net zero community-wide greenhouse gas emissions by 2040. The Net Zero Strategy includes a target that by 2030, 30 per cent of registered vehicles in Toronto are electric. The Net Zero Strategy's Short-Term Implementation Plan (2022-2025) includes actions to help ensure that Toronto is on track to meeting its 2030 and 2040 targets for EV adoption.

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.IE26.16>

On January 29, 2020, City Council approved the Electric Vehicle (EV) Strategy which includes targets for the share of EVs in registered personal vehicles in Toronto. <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.IE11.17>

COMMENTS

Transitioning from fossil fuel-powered motor vehicles to zero emission vehicles like electric vehicles (EVs) will reduce both greenhouse gas emissions and local air pollution in Toronto. For these reasons the City has established targets to increase the current share of all registered vehicles to 30% by the year 2030. EVs have batteries that must be charged, so access to charging is a pre-requisite for switching to an EV. It is estimated that about 80% of EV owners charge their vehicle at home.

In Toronto, five (5) per cent of residents rely on residential on-street parking permits for their vehicles. Commonly known in the EV industry as "garage orphans", these residents experience a challenge on one of the necessary pre-requisites to EV purchase and may be hesitant to embrace EV technology without private access to charging.

This report considers two privately funded options that may meet the needs of garage orphans in the city but would result in some additional costs to the City due to the administration and oversight of the programs:

- Allowing the private purchase and permanent installation of privately owned charging stations located on-street in front of, or close to a resident's home
- Allowing "as needed" EV charging by running an electrical cord, covered with an accessible ramp, over the sidewalk to an on-street parking spot in front of a resident's home

However, these options:

- create potential public safety risks, including potential physical accessibility issues on the sidewalk, requiring management by the City
- would incur costs which may be prohibitive to both the City and the resident
- would constrain the City's ability to effectively manage the right-of-way in the public interest
- would be inequitable by privileging only individuals who can afford to pay for the infrastructure, a dedicated parking spot

Permanent private installation of EV charging stations on the public right-of-way

One suggested solution to increase at-home charging opportunities is to allow residents to privately own EV charging infrastructure adjacent to on-street parking spaces near their homes.

Although this may seem like the most logical option, among many other factors -- appropriate charging station locations, cost and safety considerations associated with

permanent installation would all be of concern to the City and the resident contemplating the installation.

Siting

To be consistent with current existing on-street charging station installation, the easiest and least expensive option to deploy a charging station would be to install the charging station on an existing wooden electrical pole or "pole installation". However, suitable locations that meet conditions that would allow pole installation are limited and may therefore, not be easily located where desired. The concept of charging stations being mounted on stand alone pedestals which can be located anywhere has been considered an alternative, however, based on the experience of other jurisdictions and preliminary cost estimates developed by the Toronto Parking Authority, installation of pedestal-mounted on-street charging stations are double the cost of pole-mounted charging stations.

Current process for siting on-street charging stations

Based on the steps outlined in the "On-street Electric Vehicle Charging Stations - Pilot Conclusion and Next Steps ([2022.IE.30.11](#)) as well as ongoing intake for requests for charging stations, the City uses a framework for determining locations for public on-street charging stations.

While no formal intake process for on-street charging station requests exists, residents, businesses, non-profit organizations, and City Councillors can send these requests to the TransformTO email address (transform@toronto.ca) where Environment and Climate forward them along for further consideration. Requests that have been submitted via other channels are also collated for consideration.

These requests along with information from the TPA are used to assess technical suitability of a location including factors that include existing wooden electric poles. Importantly, as part of the technical review, stations are also assessed as to whether or not their existence would impede equitable access to the right-of-way (ROW). Lastly, local Councillors are engaged in the approval of charging locations.

Activities related to public EV charging infrastructure are coordinated through a working group composed of Environment and Climate Division, Fleet Services, Toronto Hydro, Toronto Parking Authority, the TTC, and Transportation Services.

Costs

A number of capital and operating costs would need to be borne by the private individual or organization when permanent EV charging infrastructure is installed.

Some of those costs, beyond the cost of the EV charging unit itself, include:

- The design, construction, electrical connection, signage, and commissioning and decommissioning if the station is removed
- Ongoing operational costs including electricity, network fees and insurance
- Fees to the City for occupancy of ROW (permit fee to cover administration of program and inspection/enforcement)
- Removal of existing private infrastructure and restoration of the ROW to City standards

Risks

EV charging stations are high voltage electrical dispensing equipment. When they are located in the public ROW, EV charging stations can introduce public safety risks if they are not properly installed, maintained and operated.

When the City or the TPA deploys on-street charging stations, there is direct control of the installation and operation of charging stations to ensure public safety.

Furthermore, additional risks may occur in the event of a transfer of ownership of the infrastructure and the City would need to establish requirements and procedures to mitigate this risk.

Electric cables across sidewalk with accessible ramp cover to on-street parking spot

A second suggested solution has been to allow electric cables, covered with an accessible ramp, to run across the sidewalk to an electric vehicle parked at the curbside. This has been done in cities like the City of Vancouver.¹

Again, although this may appear to be an easy and logical solution, there are a number of issues and concerns that have been identified by Transportation Services regarding this option that would need further consideration including:

- Challenging conditions with sidewalk snow removal during winter operation if electrical cables are not removed when required. Snow removal equipment could damage EV cables, even if covered, and could damage EV connectors if dislodged from vehicle leading to potential damage of the vehicle itself;
- Trip hazards due to cable covers
- Potential exposure of pedestrians and animals to electric shock should they come in contact with any damaged cables on the sidewalk

¹ [Electric Vehicle Charging Cord Cover Specifications \(vancouver.ca\)](https://www.vancouver.ca)

- Municipal Code Chapter 743 (Streets and Sidewalks, Use of) would need to be amended, to allow for cables to be allowed to run across the sidewalk, including the introduction of an application fee and annual permit fee (separate fee or combined with the existing permit parking fee)
- Resident/EV owner would need insurance and City would need to be relieved from any liability
- Administration of this program would require periodic inspections and enforcement to ensure that EV owners comply with approved requirements and conditions, which could impact existing staff resources depending on the uptake of the program

While other jurisdictions have addressed some of these issues, their circumstances are not necessarily analogous to the City of Toronto, for example, responsibilities for snow clearing.

Managing the ROW in the Public Interest

The City manages the ROW in the public interest and, in keeping with this, does not provide dedicated parking for individuals on City streets. Placing privately owned infrastructure in the public right of way is precedent setting and Council should exercise caution in their consideration regarding the impacts of opening up access to allow for other ROW applications in future.

The City currently assigns curbside access for specific uses only when there is a public benefit from doing so (e.g., designated on-street accessible parking, car share spots, or various forms of loading zones), but resulting regulations pertain to kinds of uses not particular individuals.

Permission to install charging infrastructure in the ROW would be conditional on the resident acknowledging and agreeing to the City's right to manage the ROW in the public interest, including the possibility of removal of the infrastructure.

Summary

Allowing private installation of EV charging on public streets would entail significant costs for the individual installing the infrastructure and/or considerations related to equity, public safety, the City's ability to manage the ROW in the public interest, and implementation burden for the City.

It is therefore recommended that the two options discussed in this report not be considered by the City.

In 2022, the Toronto Parking Authority (TPA) was directed to lead the deployment of public charging stations throughout the City ([2022.IE30.11](#)). TPA's approach is based on public provision of charging, therefore, private installation of charging has not been contemplated by the TPA.

To date, the City's approach to meeting the needs of garage orphans has been to provide shared public charging access, via public charging stations, on-street in some residential neighbourhoods, on-street in paid parking locations, as well as in parking lots owned and managed by the Toronto Parking Authority (TPA).

So far, the City has installed 47 on-street publicly-accessible EV charging stations that are available to 'garage orphans'. Further, fifty (50) additional on-street charging stations will be installed this year, mostly at pay-and-display parking spaces as directed by City Council.

The Toronto Parking Authority has also installed more than 100 charging ports in Green P parking facilities with an additional 175 planned for installation this year. Nearby residents can use both on-street and off-street charging stations to meet their charging needs and the TPA has enacted a rate structure that incentivizes overnight charging specifically geared towards residents.

Based on current plans, more than 650 charging ports will be deployed by the end of 2024 at on-street parking spaces and in Green P parking facilities thus increasing residential charging opportunities close to one's home. Increasing the number of public charging stations is the most expedient and safe way to meet on-street residential charging needs.

Aside from the City as an infrastructure provider, public and private sector organizations have interests in providing public charging to generate revenue and/or to provide employee/client amenities. As of January 2023, more than 1,600 publicly-available and privately financed EV charging stations exist across Toronto.

To help ensure that public EV charging infrastructure will be available where and when it is needed to support the City's goals for EV uptake, the City is developing a long-term Public EV Charging Plan (the Plan). This Plan, which will be brought to Council in Q4, and will include detailed projections of public EV charging needs across the City and over time to 2040.

The Plan will propose potential sites for public charging infrastructure to meet these needs, note the range of options for funding and operating public charging infrastructure, and discuss key technical, financial, policy and equity considerations. It is expected that many more opportunities in neighbourhoods will be identified for residential charging e.g., school parking lots, community and public library parking lots.

To ensure that the Plan accurately reflects the needs and priorities of Toronto residents and business, Plan development will include extensive public and stakeholder engagement.

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ATTACHMENTS
