CITY OF VANCOUVER

REPORT

Report Date: January 13, 2021
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Meeting Date: February 9, 2021
Submit comments to Council

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: License for Covered Electrical Cords for Electric Vehicle Charging - Climate Emergency

RECOMMENDATION

THAT Council authorize the General Manager of Engineering Services to enter into and execute license agreements on behalf of the City of Vancouver, allowing owners and occupants of residential property to access City lands adjacent to their property for the purpose of charging electrical vehicles, on such terms and conditions as may be acceptable to the Director of Legal Services.

Approval of this recommendation requires at least 2/3 affirmative votes of all Council members under Section 161 of the *Vancouver Charter*.

REPORT SUMMARY

The purpose of this report is to seek approval for licensing the use of electrical cords and covers that cross sidewalks, for the purpose of charging private electric vehicles (“EVs”) on-street, or other locations as determined appropriate by the General Manager of Engineering Services.

Approval of this report will increase access to safe, at-home EV charging in many areas of the city and allow residents to conveniently charge their EVs without unduly impeding sidewalk users. This low-cost option reduces the need for additional, more expensive public charging investments by the City.

Allowing residents to charge EVs while they are parked on the street will help make EVs a more attractive choice compared to internal combustion engine (“ICE”) vehicles by increasing charging access, the lack of which is a barrier for many who are interested in switching to an

EV. Facilitating and encouraging this switch will help the City to meet its climate emergency targets, among other co-benefits.

Other potential applications of these specifications are being explored and could include licensed patios wishing to power temporary outdoor lighting without a generator or special events requiring temporary, low-power electrical applications, among others.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In November 2020, Council adopted the Climate Emergency Action Plan (CEAP), which aims to cut emissions to 50% of 2007 levels by 2030. The CEAP's recommendations I, J, K, and L aim to support increased access to EV charging. Recommendation I aims to increase EV charging options for those who do not have access to off-street, at-home charging. The recommendations in this report comprise a part of those actions that Council directed staff to implement through Recommendation I of the CEAP.

In March 2018, Council approved changes to the Vancouver *Building By-law* and *Parking By-law* to require that 100% of parking stalls, excluding visitor stalls in new multi-unit residential buildings include EV charging infrastructure. Council subsequently approved updates in April 2020 to these By-laws to clarify that all new residential parking stalls in one- and two-family dwellings must also have EV charging infrastructure.

In June 2017, Council adopted the Curbside Electric Vehicle Charging Pilot Program, which created a framework to increase access to convenient and affordable EV charging options for those who do not have access to off-street at home charging.

In November 2016, Council adopted the EV Ecosystem Strategy, which established 32 priority actions for the City between 2016 and 2021, with the aim of achieving broader home, workplace, and public charging opportunities for the growing EV market.

In November 2015, Council adopted the Renewable City Strategy, committing to derive 100 per cent of all energy used in Vancouver from renewable sources before 2050 and to reduce greenhouse gas emissions by 80 per cent from 2005 levels before 2050.

In August 2013, Council adopted new minimum requirements for all parking stalls in new one and two-family homes, 20 per cent of parking stalls in multi-unit residential buildings, and ten per cent of parking stalls in new commercial buildings, such that they be equipped with a "Level 2" charging circuit under the Vancouver Building By-law.

In October 2012, Council adopted Transportation 2040, which includes actions to support electric vehicle deployment and the provision of charging infrastructure.

In 2009, Council adopted requirements in the Vancouver Building By-law for electric vehicle charging circuits in new homes and multi-unit residential buildings. These were the first such requirements in North America.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

REPORT

Background/Context

Many Vancouver residents who are interested in switching from fossil-fueled vehicles to EVs struggle to find reliable and convenient charging solutions. Access to charging is particularly difficult for residents without dedicated off-street parking, including those who rent suites in houses or who do not live near public fast charging stations.

Some residents without dedicated off-street parking have installed illegal on-street EV charging infrastructure. The City has removed this type of infrastructure due to unsafe installation and obstruction to pedestrian access, the latter of which disproportionately impacts people with physical disabilities. *Ad hoc* installations that have been designed by well-meaning residents seeking to make them unobtrusive often do not meet basic structural or electrical safety standards, posing a risk to both the user and passersby.

Between 2017 and 2019, the City licensed the installation of electrical outlets under the Curbside Charging Pilot Project. This pilot project had very few successful applicants, and did not result in the number of anticipated residential connections. City staff estimate that these results stemmed from the high cost of installing underground infrastructure to the homeowner, the onerous design restrictions, the limitation of eligibility to a small subset of homeowners, and risk related to the fate of infrastructure upon the sale of the home.

This report proposes a covered extension cord license to enable more charging opportunities by creating a simple, low-cost option that is open to homeowners and tenants alike, and that does not require permanent infrastructure to be installed below-ground. It is one of a suite of policies that the City will undertake as part of the CEAP to accelerate the transition to electric vehicles. By providing specification on how to safely cover electrical cords while charging a vehicle, the City is likely reducing its own liability that may exist through relying solely on complaints and enforcement around illegal charging cords.

The City received 62 requests for similar arrangements through the 2017-2019 Curbside Charging Pilot and approximately 30 additional requests since the close of that pilot project. Staff anticipate that license applications under this program will be higher, given that it will be clearly authorized, and that electric vehicle adoption is more than double what it was at the beginning of the Curbside Charging Pilot.

Strategic Analysis

Transportation accounts for 39% of total carbon pollution in Vancouver and is a significant source of air pollutants that can harm human health and the environment. To mitigate these impacts, the *CEAP* and *Transportation 2040* place significant emphasis on shifting transportation modes to walking, cycling and public transit; however, these strategies recognize that light duty vehicles will continue to be a large proportion of the transportation system for the foreseeable future. Therefore, electrification of those light duty vehicles is key, as our electricity comes from sources that are about 98% renewable.

Studies have shown that Vancouverites are very interested in EV adoption. Most respondents state that they are interested in making their next vehicle an electric one, provided key barriers – including reasonable and convenient access to charging infrastructure – are removed. British Columbia has the highest market share for EVs in North America, with nearly one in ten new light-duty vehicles being electric in 2020.

Studies have shown that lack of access to EV charging – and particularly home charging – is a major barrier to switching from fossil-fueled vehicles to EVs. Vancouver currently has some of the most used EV charging stations in British Columbia, and while this usage indicates that the stations are providing utility to the public, those stations may not be available to potential new users since they are already at capacity. While the City is expanding that public network, the availability of funds to do so are limited.

The City wants to ensure that all Vancouver residents who drive have the opportunity to benefit from the shift from fossil-fueled vehicles to EVs. The CEAP emphasizes supporting this opportunity for less wealthy residents. Electricity for EV charging can be up to 85-90% lower than gasoline prices, EV battery prices have decreased by nearly 90% over the last decade, and an increase in the supply of used EVs are all improving the affordability of switching to an EV. These market conditions are accompanied by an increase in zero-emission vehicle mandates from higher levels of government, ensuring greater supply and variety available to Vancouverites. With an increase in EV adoption, an increased demand for EV charging is inevitable.

Requiring licenses for EV charging cords that cross sidewalks helps support this shift to EVs. Allowing people to charge in this manner adjacent to their homes will:

- Increase awareness of and adherence to the City's safety requirements
- Remove barriers to EV adoption for residents without access to off-street parking and/or charging
- Ease demand on public charging stations
- Reduce costs for both the City and EV drivers

This proposed program is based on an existing set of guidelines introduced by the City of Seattle in 2019. While the City of Seattle's program operates strictly on a set of voluntary guidelines, the principles and specifications are consistent with principles set out in the Americans with Disabilities Act (ADA). These principles are considered a best practice. During the first year of Seattle's pilot project (the latest point at which information was available), zero complaints had been filed to the City of Seattle regarding EV charging via the guidelines. Several other US cities, including Portland, OR, are also considering programs similar to what is proposed in this report.

During the development of the specifications provided in Appendix A, City staff researched other cities in Canada where block heater use is common. Staff were unable to identify any municipalities where cords crossing sidewalks are legal. It appears that in these municipalities, where block heaters are an essential component of operating a vehicle, the local governments take a "look the other way" approach except in excessively dangerous cases.

The proposed license agreement will include specifications for on-street charging using a standard electrical outlet (also known as Level 1 (120V) charging. Appendix A lists these specifications. While this license option will make charging easier for many residents, the City will continue to expand access to home (off-street), workplace, non-residential, and public charging to reduce the need for these sidewalk crossings.

Using such a license will not require residents to obtain additional parking or street-use permits to charge EVs on the street. Residents who have off-street parking available will be encouraged to use that for charging rather than charging on-street.

The license applies to ground-level residential uses, and is not intended for commercial or public access purposes. The City has developed the specifications for properties with an adjacent sidewalk.

The grade of the street, sidewalk heaving, or other localized physical conditions may preclude the applicability of the proposed license in some situations. Residents will not be licensed to use covered extension cords for EV charging where such conditions prevent adherence to the specifications in Appendix A.

The City will not assume any liability associated with any incident resulting from the use of charging cord covers; applicants for the proposed license will be required to indemnify the City from all liabilities, costs, damages and expenses associated with the license. This approach is comparable to that used in the 2017-2019 Curbside Charging Pilot project. Use of these specifications requires that licensees consider individual vehicle manufacturers' instructions for charging cables; and, users must consider the appropriate gauge of electrical cord for the charging load (amperage). The City will not assume any liability in the event that a vehicle's warranty is voided.

Applicants to the licensing program apply for the right to use an appropriate extension cord and cover that crosses City property (the street on which they park) adjacent to the applicant's home. Cords and covers must be in place only while connected to an EV, and must be removed from City property at all other times.

Applicants will be required to renew their license annually to ensure that they are aware of any updated requirements, should they arise; and, so that the City will have data on uptake and the ability to notify participants of any program changes. The license agreement would follow the specification guidelines indicated in Appendix A, and be subject to the approval of the City's Director of Legal Services. The license will require a nominal fee of $5/year.

Implications/Related Issues/Risk

Financial

As this program is intended to increase access to charging in an equitable manner, fees are intended to be a nominal consideration to the license agreement and will not be a significant revenue generator for the City. The initial cost of a license will be $5/year.

All costs associated with meeting the license requirements are the responsibility of the licensee.

Residents and businesses who switch from ICE vehicles to EVs are expected to reap financial savings from fewer operational and maintenance costs over the life of their vehicle. Improving the ability for residents to charge at home reduces their reliance on public charging infrastructure, in turn reducing the investment required by the City.

Human Resources/Labour Relations

Management of the licensing program will require staff time for training regarding the details of this license, development of online application webpages, and inspections by City staff that would occur on a complaints-only basis (which is already subject to enforcement under the *Street and Traffic By-law*).

Staff resource impacts are expected to be minimal once the program is launched, and will be managed within existing lines of business processes. No additional positions are expected to be required in support of this program at this time.

Environmental

There are no negative environmental impacts anticipated by licensing this form of EV charging and this work is an important component of the Climate Emergency Action Plan.

A faster shift to electric vehicles will reduce carbon pollution. Nitrogen oxides and particulate matter have significant impacts on air quality: reducing tailpipe emissions will reduce these pollutants and positively affect air quality. The recommendations in this report will provide easy charging opportunities for many residents, helping to speed the transition away from fossil fuels.

Legal

Section 289A of the *Vancouver Charter* enables Council to permit an owner or occupant of real property abutting on a street to construct, maintain and use a structure in or under any part of a street, whether or not the portion of the street included in the lease or licence extends beyond the side boundaries of the real property.

A license agreement that is satisfactory to the City's Director of Legal Services will be developed for the Electric Vehicle Charging Cord Specifications for Crossing Sidewalks (Ground-level Residential Use).

The term of the agreement would be for one year with annual renewal.

Other – Equity, Engagement, and Accessibility

This initiative anticipates several positive equity outcomes and few, if any, negative equity impacts.

Pollutants from fossil fuel combustion are the primary source of poor air quality in Vancouver, with the exception of particulate matter from wildfires during fire season. Electric vehicles produce no tailpipe pollution, which benefits everyone in the region, particularly those most exposed to air pollution along arterials. Lower income and marginalized communities are disproportionately impacted by poor air quality.

Not all residents have access to off-street parking or charging, especially those who live in secondary suites in a house, laneway homes, or those who live in neighbourhoods zoned without off-street parking.

Level 1 charging is typically more affordable than other charging options and is significantly more affordable than filling a gas tank with fossil fuels. Most current public charging is concentrated in central, commercial areas of the City, leaving wide swaths of the City without public charging. Curbside electrical charging would expand access to a more affordable fuel throughout the city.

City staff engaged the Persons with Disabilities Advisory Committee (PDAC) to mitigate accessibility concerns. The feedback received during that engagement informed the

specifications that are provided in Appendix A. For many persons with disabilities who find public charging stations inaccessible, street charging may be their best EV charging option.

City staff received feedback from the Canadian National Institute for the Blind ("CNIB") that did not support this initiative. The CNIB could not support any instance of materials being placed on sidewalks. However, City staff deemed that alternative suggestions, such as overhead structures or placement of electrical cords through street trees, were significantly less safe than the options proposed in this report. The licensing approach being proposed does allow staff to track usage and allows for changes to the specifications as necessary.

The following table summarizes concerns received from both the CNIB and the PDAC, and the anticipated mitigations in the program proposed herein.

Concern	Mitigation
Cord covers will become ubiquitous; make sidewalks less accessible for wheelchairs, people with visual impairments, among others.	The cord cover licensing program is part of a suite of EV charging actions. The specifications encourage residents with access to off-street parking to use that for charging their vehicle whenever possible. Further, cords may only cross sidewalks when connected to a vehicle, and must be removed when not in use.
Sidewalks may already have other obstructions or slopes: adding additional irregularities to the surface makes the problem worse.	The specifications are clear that a flat, level ramp must be achievable, and that putting cord covers across sidewalks may not be feasible in front of every home.
City can't adequately regulate the specifications if cord covers are used by residents.	Placing a structure – including a cord cover – without a license would be a violation of the *Street and Traffic By-law*. Enforcement can include warnings, revocation of the license, and fines as set out in that By-law. Breach of the license agreement could result in revocation of the license, although staff will prioritize educating the public to improve compliance, over imposing penalties.
Specifications are too subjective for the public	City staff have the opportunity to inspect and educate. Specifications can be modified as necessary, and the City can cancel the program entirely should it become unworkable for staff or residents. City staff will review and update specifications as necessary on a regular basis.

Concern	Mitigation
The City will not be able to track use or advise residents if changes are made	By creating a licensing program, City staff will have contact information for all residents taking advantage of this program. Should changes to the specifications be deemed necessary, staff can contact all participants and seek to require these changes. Furthermore, the annual renewal requirement for the license will ensure that all licensees are updated and re-familiarized with the safety requirements at least once per year.

City staff also engaged numerous technical experts in refining the technical specifications, which are based on those created by the City of Seattle for a similar program. The Seattle program has been operating successfully since 2019.

Per the *CEAP* Appendix M Action and Equity Milestones, this initiative will be part of the Neighbourhood Charging Strategy, which is to be developed along with other EV initiatives by engaging with the public and following action and equity milestones as laid out in *CEAP* Appendix M on page 10. The data from this initiative will support equity-oriented refinement of other EV initiatives.

CONCLUSION

Adopting specifications for EV charging cords that cross sidewalks provides opportunity for residents who wish to access convenient and affordable EV charging infrastructure near their home. These specifications will expand the EV charging network at no cost to the City, and in a way that limits risk and liability. The installation of charging infrastructure supports the Climate Emergency Action Plan and the *EV Ecosystem Strategy* vision of accelerating the electrification of light-duty vehicles, improve equity and is integral to achieving the City's goal of deriving 100 per cent renewable transportation before 2050.

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Appendix A: Charging Cord Cover Specifications

Charging cords must be covered by a high-contrast, light-reflective, slip-resistant, stable, and secure low-angle cable ramp while charging. The City encourages licensees to opt for the lower-profile (less than 2 cm height) option whenever possible.

1. If the total height of the equipment (both cord and ramp) does not exceed 2 cm, the following requirements apply:
   - The ramp shall cover the entire width of the sidewalk and can be no less than 1.2 m wide;
   - The ramp shall be no steeper than a 50% grade or 1:2 gradient.

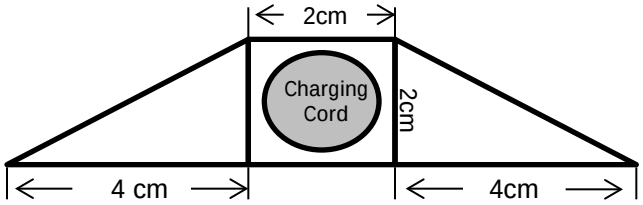


Figure 1 - Cross-section of ramp requirements for total heights up to 2 cm

2. If the total height of the equipment (both cord and ramp) exceeds 2 cm in height, the following requirements apply:
   - The ramp shall be no steeper than an 8.3% grade or 1:12 gradient (example shown in Figure 2);
   - A 1.5 m x 1.2 m or greater landing platform shall be at the top of the ramp;
   - The landing at the top of the ramp must be flat, with no more than a 2% slope (1:50 gradient) in any direction; and,
   - The ramp shall cover the entire width of the sidewalk and can be no less than 1.2 m wide (Figure 3);
   - A 1.5 m x 1.2 m clear landing on the sidewalk must be present on either side of the ramp;
   - Perpendicular to the direction of travel, the ramp cannot have a cross slope exceeding a 2% grade (1:50 gradient).

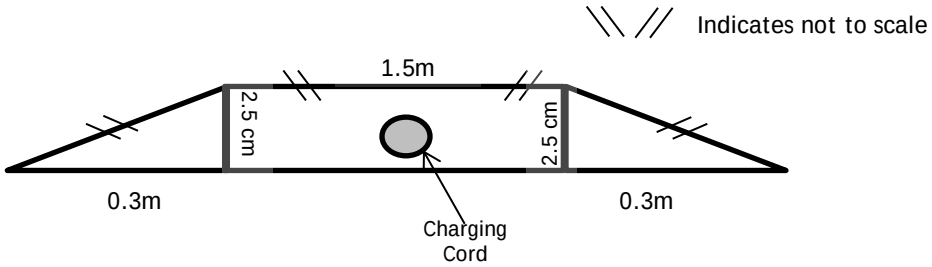
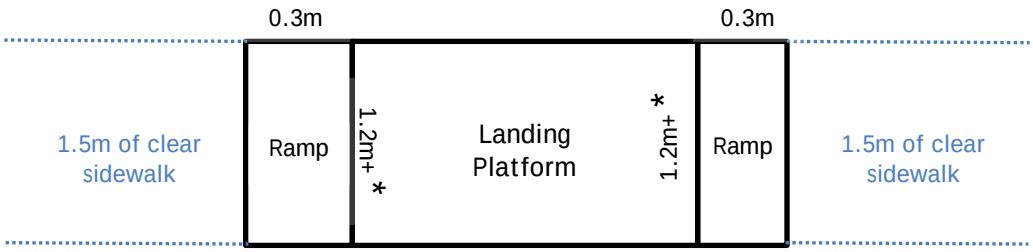


Figure 2 - Cross-section of ramp requirements for total height greater than 2cm; example based on total height of 2.5 cm



* shall be the width of the sidewalk and no less than 1.2m

Figure 3 - Overhead diagram of ramp requirements for total height greater than 2cm

Additional Requirements and Conditions

- The cover must be constructed so as to protect the charging cable from crushing or other damage. It is your responsibility to maintain the cable in a safe condition and protect it from physical damage.
- Adherence to these specifications do not provide any guarantee of access to any on-street parking space.
- Use of signage or other means to reserve a parking space in front of your residence is prohibited
- Use only Level 1 (120V) charging equipment. No Level 2 (240V) charging cords may cross the public right-of-way.
- The EV charging cord and ramp shall cross perpendicular to the sidewalk to minimize obstacles to mobility.
- When not connected to an EV, all equipment shall be removed and stored on private property.
- All local parking regulations, both temporary and permanent, remain unchanged and shall be followed.
- All snow and ice clearing by-laws continue to apply, and cords and covers must be placed directly onto the sidewalk surface.
- You are responsible for complying with all relevant sections of the current Canadian Electrical Code and the Vancouver Electrical By-law 5563. This includes, but is not limited to, the use of a ground fault circuit interrupter (GFCI) receptacle for the electrical cord.
- You should use an outlet linked to your utility bill; or have permission from the utility account holder that you may use their outlet for the purpose of charging an electric vehicle, per the conditions of the license agreement.
- The City recommends that tenants wishing to obtain a license and follow these specifications obtain permission from their landlord.

ENFORCEMENT

Failure to comply with these specifications may result in the removal of equipment and the collection of expenses incurred to restore public space in the manner provided by law.