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| TO: | CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MARCH 19, 2018 |
| FROM: | KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER |
| SUBJECT: | NEW PUBLIC ELECTRIC VEHICLE (EV) CHARGING STATIONS |

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental & Engineering Services & City Engineer,

- a) The information on Natural Resources Canada's Curbside Electric Vehicle Charging Pilot Program and the support being provided by London Hydro and the City of London **BE RECEIVED** for information; and
- b) the attached proposed revisions to the Traffic & Parking By-law (PS-113) (Appendix A) **BE INTRODUCED** at the Municipal Council Meeting on March 27, 2018 to permit the issuance of parking tickets to a parked vehicle that blocks access to a municipally-controlled electric vehicle parking space, unless that vehicle is an electric vehicle plugged into an electric vehicle charging station.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Update on the Provincial Public Electric Vehicle (EV) Charging Application Process and Next Steps (November 1, 2016 meeting of the Civic Works Committee, Agenda Item #13)

STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of climate change, transportation, innovation and other related environmental issues in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)). Expanding the network of charging stations for electric vehicles supports three of the four Areas of Focus:

Building a Sustainable City

- Convenient and connected mobility choices
- Strong and healthy environment

Leading in Public Service

- Collaborative, engaged leadership
- Excellent service delivery

Growing our Economy

- Local, regional, and global innovation
- Strategic, collaborative partnerships

BACKGROUND

PURPOSE:

The purpose of this report is to provide the Civic Works Committee and Council with information on the Natural Resources Canada (NRCan) Curbside Electric Vehicle Charging

Pilot Program and the roles being played by London Hydro and the City of London to support this pilot program here in London. This includes revisions to the Traffic & Parking By-law (PS-113) to permit the issuance of parking tickets to vehicles that block access to electric vehicle (EV) charging stations at municipally-controlled parking locations.

CONTEXT:

The City of London led a pilot project in 2012 and 2013 to install Level 2, 240 volt EV charging stations at the City Hall Lower Level Parking Garage, Budweiser Gardens and Covent Garden Market. The Covent Garden Market location was discontinued and repurposed as a CarShare location, but the other two remain in operation. In 2017, the City Hall charging station has experienced over 75 percent utilization during weekday business hours, while remaining available to the public outside business hours. The current charger at the Budweiser Gardens location is not designed to collect and report on utilization rates.

EV charging is an important component of London's Community Energy Action Plan (CEAP), the recently approved Parking Strategy for Downtown London, part of the Future Cities Strategy project and all tied to Building a Sustainable City. CEAP has a transportation-specific goal to decrease the amount of petroleum-based fuel used per capita by 15 percent from 2012 levels by 2018. As of 2016, petroleum-based fuel used per capita has actually increased by over 10 percent since 2012. EVs are anticipated to be a small but important and growing part to help reverse this trend beyond 2018.

Both the provincial and federal governments have increased investment in EV charging infrastructure. The Ontario Ministry of Transportation through its Electric Vehicle Chargers Ontario Program (EVCO) have installed Level 2 and Level 3 public EV charging stations throughout Ontario, and has recently launched its new Workplace Electric Vehicle Charging Incentive Program in January 2018. Natural Resources Canada (NRCan) is working with FLO - AddÉnergie Technologies Inc. (FLO), a Quebec-based company with an extensive EV charging network in that province, on the implementation of charging stations across Canada, including the new FLO EV charging station at the Canadian Tire gas bar at White Oaks Mall.

There is also private sector investment in customer-focused public EV charging stations in London from both local and national businesses such as Goodlife Fitness, Mountain Equipment Co-op, TD-Canada Trust, Teppermans, and many automobile dealerships. To date, there are 27 publicly-available EV charging stations (38 charging ports in total) in London, including three DC fast-charging stations, as shown on Figure 1 in Appendix B. This is three times more than there were back in November 2016.

The EVCO program is planning to install publicly-available EV charging stations at the following locations some time in 2018, as shown on Figure 2 in Appendix B:

- St. Joseph's Health Care (three Level 2 charging ports)
- London Health Sciences Centre Victoria Hospital (ten Level 2 charging ports)
- Wellington Commons – 1115 Wellington Road South (two Level 2 charging ports)

DISCUSSION

An Overview of Electric Vehicle Chargers

Electric vehicle charging technology is classified in to the following three levels depending on their power output:

- "Level 1" - a 120 volt alternating current (AC) standard wall outlet, similar to the power used for an electric space heater or a hair dryer, capable of adding about 5 to 8 kilometres of range per hour;
- "Level 2" - a 208 – 240 volt AC outlet, similar to the heavy-duty power used for a clothes dryer, capable of adding about 15 to 35 kilometres of range per hour

depending upon the type of EV (higher for battery-only EVs); and

- “Level 3” – a 480 volt direct current (DC) fast-charging station is capable of adding about 100 kilometres of range in about 20 minutes depending upon the EV.

Every EV sold in North America is able to use the standard SAE J1772 Level 2 charging connector, and most of the existing publicly-available EV charging locations use this connector. However, it is important to note that some locations also provide connectors exclusively for use with Tesla vehicles and that these cannot be used by other EV makes and models.

The growth in publicly-accessible EV chargers is due in large part to the role played by private-sector EV charging network operators such as FLO and ChargePoint, as well as the MyEVRoad stations funded by the EVCO program. These network operators make use of smart phone apps providing both payment and real-time station availability for EV drivers.

The transition away from “free charging” towards “user-pay” public EV charging is required to help the long-term financial sustainability of expanding EV charging infrastructure.

NRCan Curbside EV Charging Pilot Program

NRCan is working with FLO on the implementation of Level 2 charging stations specially designed for street-side installation in five major Canadian cities, based on the expertise developed by the deployment of hundreds of charging stations in Montréal. FLO approached the City of London in late August to explore the City’s interest in participating in a pilot program. City staff engaged London Hydro to determine their interest in participating and leading this activity in London.

London Hydro obtained approval from their Board on December 12, 2017 to participate in this pilot project and install three curbside charging stations in different locations in downtown London. Each station would be equipped with two EV charging ports, as illustrated in Figure 3 in Appendix B. It is estimated that installation will take place in summer 2018.

Location Selection

London Hydro worked with City staff to select three locations, as illustrated in Figures 4 through 6 in Appendix B, that have both electricity supply infrastructure nearby as well as curbside parking locations that would not be impacted by the Bus Rapid Transit implementation:

- Dundas Street angled parking, north side, between Wellington and Waterloo
- Talbot Street curbside parking, east side, between King and York
- Pall Mall Street, south side, east of Richmond

These locations were reviewed with Downtown London.

Funding and Revenue

London Hydro is the lead on this \$70,000 pilot project, funded as follows:

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| Natural Resources Canada | \$30,000 | 43% |
| London Hydro | \$30,000 | 43% |
| City of London | \$10,000 | 14% |
| <i>Total</i> | <i>\$70,000</i> | |

London Hydro will own these stations, but will be operated as part of the FLO Network and co-branded accordingly. The City of London’s contribution of \$10,000 comes from existing program funding for the ongoing implementation of the Community Energy Action Plan. City funding will be used to cover the costs for signage, parking spot painting, as well as contribute towards installation costs.

Use of the charging station will use time-based (\$1.50 per hour) cost recovery from users to cover both electricity consumption costs as well as overhead costs for operating the charging stations. This hourly rate is consistent with the rates charged by private-sector EV charging network operators. This revenue is not expected to provide complete cost recovery for incurred capital costs unless utilization is higher than anticipated.

Parking Enforcement at EV Charging Stations – Traffic & Parking By-law Revision

It is important that these EV charging stations be accessible to EV drivers who need to charge their vehicles, similar to drivers who require the use of and have permits to use Accessible Parking spots. This would require a revision to the Traffic & Parking By-law, so that any vehicle parked at an EV charger on municipal property that is not plugged in to the curbside charger can be issued a parking ticket. The City of Burlington, Ontario’s Parking By-law was used as model for the development of the proposed Traffic & Parking By-law revisions outlined in Appendix A.

The curbside charger units are equipped with indicator lights to make it easy for Parking Enforcement staff to identify those parking spots that have an EV plugged into the curbside charger.

ACKNOWLEDGEMENTS:

This report was prepared with assistance of Shane Maguire, Division Manager of Roadway Lighting & Traffic Control, Doug Bolton, Sr. Transportation Technologist, Ardian Spahiu, P.Eng., Transportation Design Engineer and Annette Drost, Manager of Municipal Law Enforcement Services.

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Appendix A Proposed Revisions to the Traffic & Parking By-Law (PS-113)

Appendix B Maps of Current Charging Locations and Upcoming NRCan Curbside Charging Stations in London, Ontario

- c George Kotsifas, Managing Director, Managing Director, Development and Compliance Services and Chief Building Official
- Allan Van Damme, Director of Operations, London Hydro
- Vinay Sharma, CEO, London Hydro

APPENDIX A

BY-LAW TO AMEND THE TRAFFIC & PARKING BY-LAW (PS-113)

Bill No.
2018

By-law No. PS-113-18____

A by-law to amend By-law No. PS-113 entitled, "A by-law to regulate traffic and the parking of motor vehicles in the City of London."

WHEREAS subsection 10(2) paragraph 7. of the *Municipal Act, 2001*, S.O. 2001, c.25, as amended, provides that a municipality may pass by-laws to provide any service or thing that the municipality considers necessary or desirable to the public;

AND WHEREAS subsection 5(3) of the *Municipal Act, 2001*, as amended, provides that a municipal power shall be exercised by by-law;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. Section 1 of By-law No. PS-113 is amended by adding the following new definitions:

"Electric Vehicle" means a vehicle that is propelled by one or more electric motors, using electrical energy stored in one or more rechargeable batteries or another energy storage device and is capable of being plugged into an Electric Vehicle Charging Station and includes a plug-in electric car and a plug-in hybrid car;

"Electric Vehicle Charging Station" means any facility or equipment that is used to charge a battery or other energy storage device of an Electric Vehicle;

"Electric Vehicle Parking Space" means a parking space designated for the use of Electric Vehicles as indicated by a sign in the form set out in Schedule 29 to this By-law;

2. By-law No. PS-113 is amended by adding the following new Section 10.1:

"10.1 No Parking Electric Vehicle Parking Space

(a) No person shall park a vehicle or any part of a vehicle in an Electric Vehicle Parking Space where such vehicle is not an Electric Vehicle.

(b) No person shall park a vehicle or any part of a vehicle in an Electric Vehicle Parking Space where such vehicle is not connected to an Electric Vehicle Charging Station and charging."

3. By-law No. PS-113 is amended by adding the following new Schedule 29 attached, entitled "Electric Vehicle Charging Signage":

4. This by-law comes into force and effect on the day it is passed.

PASSED in Open Council on March 27, 2018.

Matt Brown
Mayor

Catharine Saunders
City Clerk

First Reading – March 27, 2018
Second Reading – March 27, 2018
Third Reading – March 27, 2018

Schedule 29 Electric Vehicle Charging Signage



APPENDIX B

Maps of Current Charging Locations and Upcoming NRCan Curbside Charging Stations in London, Ontario

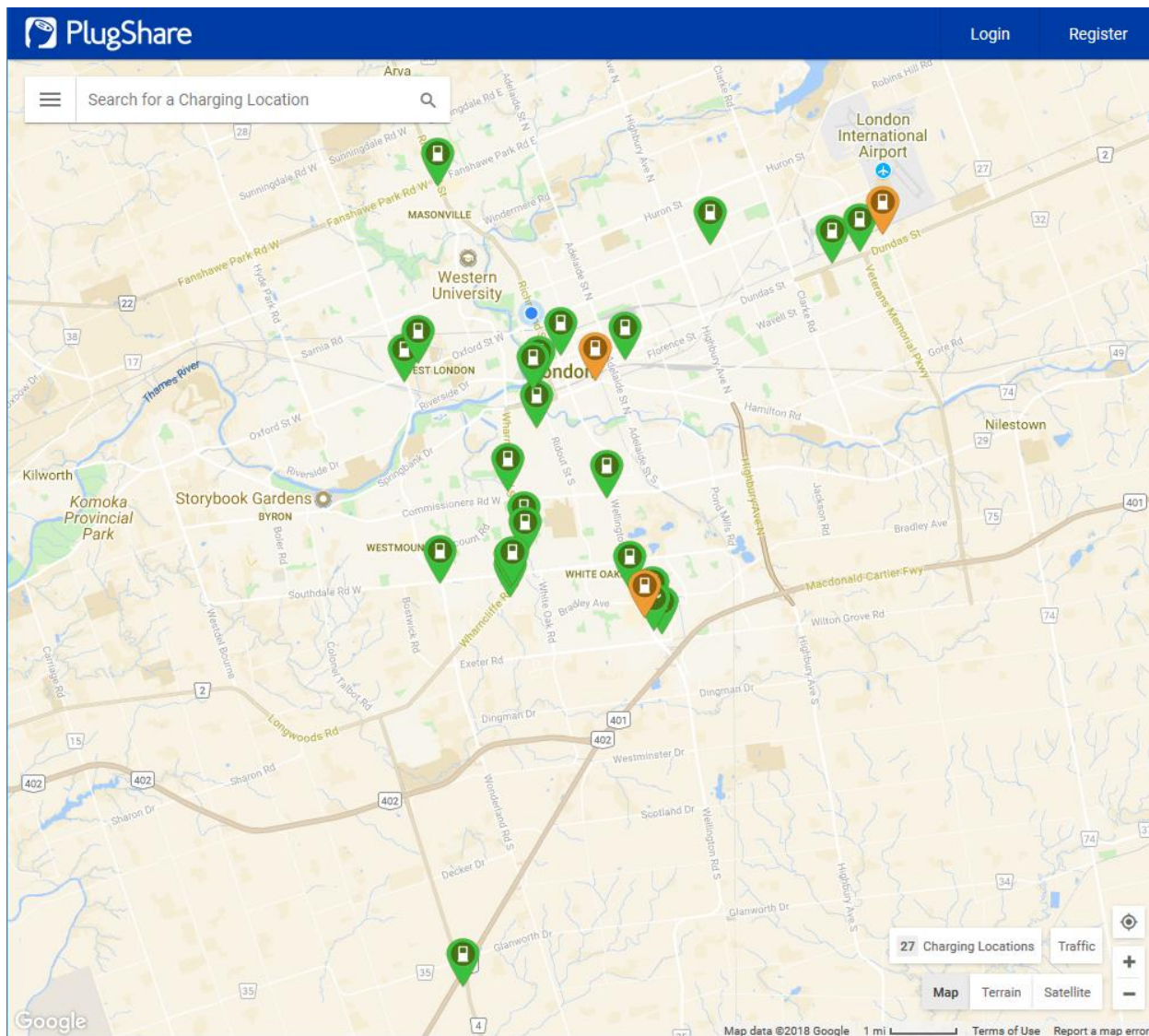
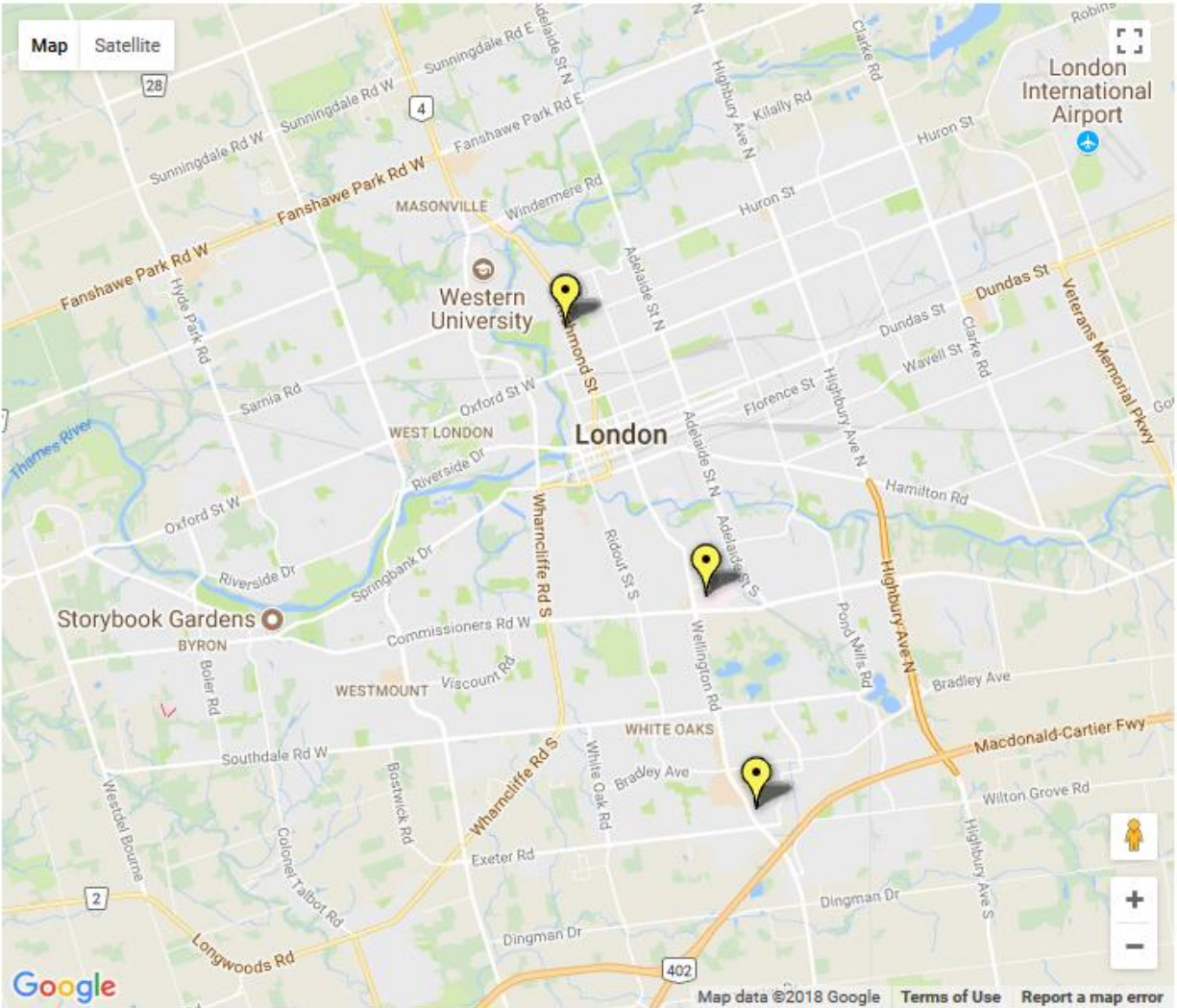


Figure 1 - Existing EV Charging Stations in London (Source: plugshare.com)





Legend:  In service  Coming Soon

Figure 2 - Future EVCO Public Charging Stations in London (Source: Ontario Ministry of Transportation website)



Figure 3 - FLO Charging Station at Canadian Tire on Wellington Road South

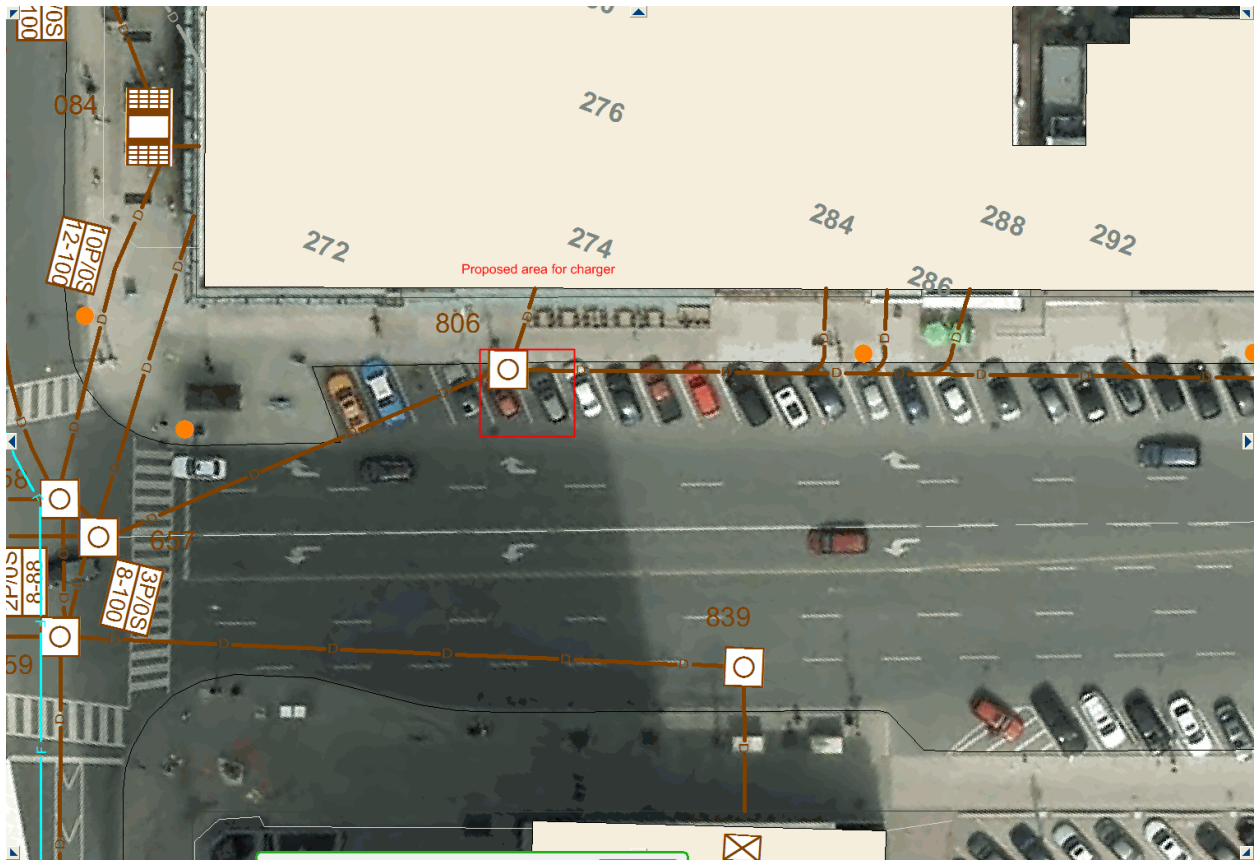


Figure 4 - Location for Dundas Street Curbside EV Charging Station

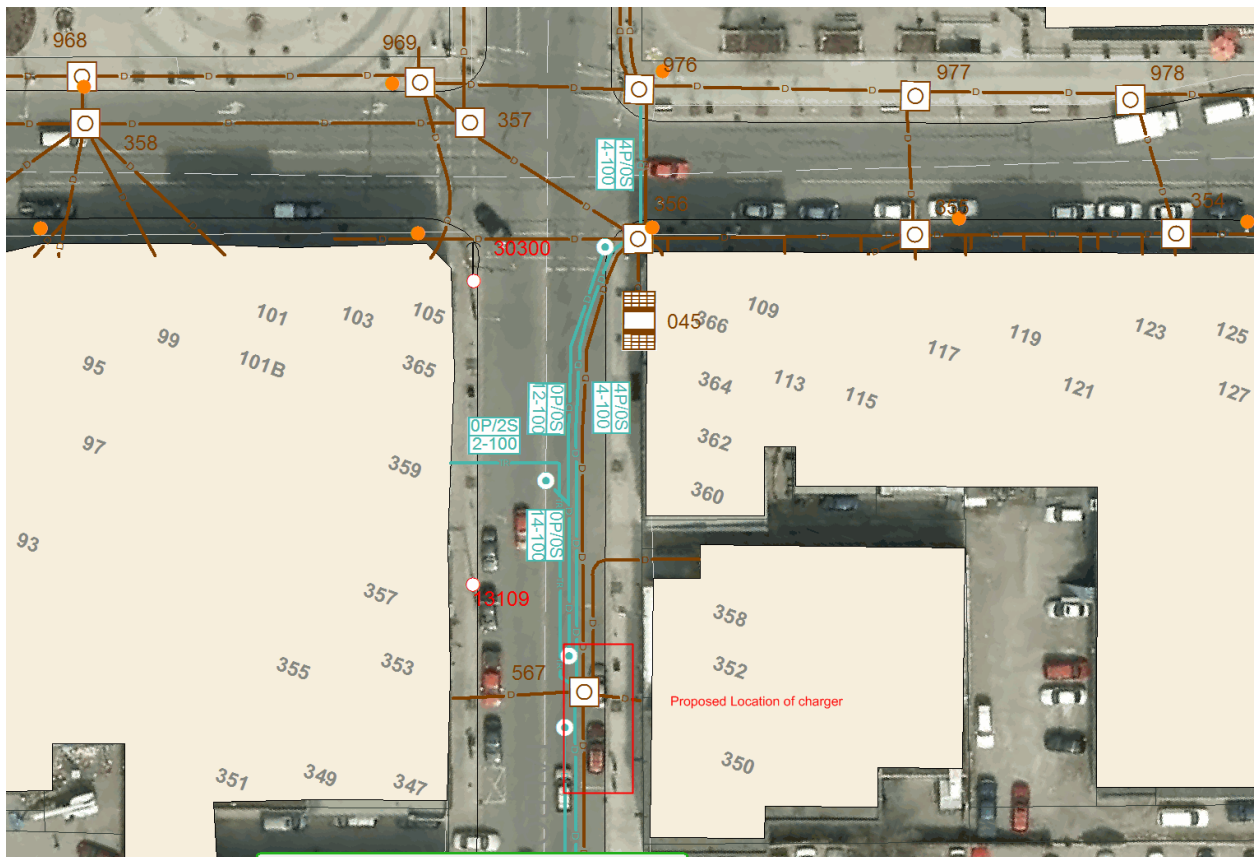


Figure 5 - Location for Talbot Street Curbside EV Charging Station

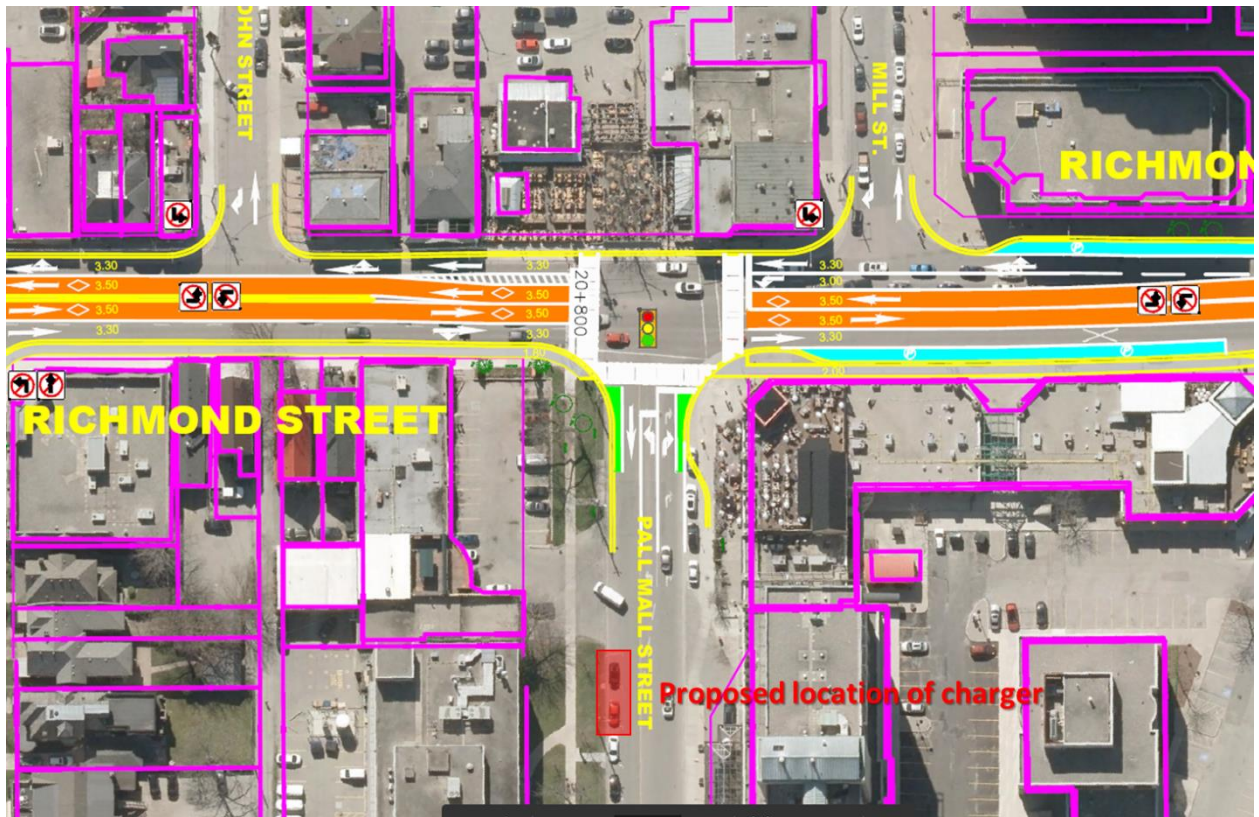


Figure 6 - Location for Pall Mall Street Curbside EV Charging Station