TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MARCH 29, 2016**
FROM:	**JAY STANFORD, M.A., M.P.A. DIRECTOR, ENVIRONMENTAL PROGRAMS & SOLID WASTE**
SUBJECT:	**RESPONDING TO THE PROVINCIAL PUBLIC ELECTRIC VEHICLE (EV) CHARGING STATIONS APPLICATION PROCESS AND RELATED UPDATES**

RECOMMENDATION

That on the recommendation of the Director – Environment, Fleet & Solid Waste, the following report **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

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

- Electric Vehicle (EV) Charging Station Pilot Project (February 4, 2013 meeting of the Environmental and Transportation Committee, Agenda Item # 6)

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

Growing our Economy
- Local, regional, and global innovation
- Strategic, collaborative partnerships

Leading in Public Service
- Collaborative, engaged leadership
- Excellent service delivery

BACKGROUND

PURPOSE:
The purpose of this report is to provide the Civic Works Committee and Council with background information on the City of London's potential role in supporting applicants' submissions to the Ontario Ministry of Transportation's Electric Vehicle Chargers Ontario (EVCO) Program.

CONTEXT:
The Province of Ontario, as part of its Climate Change Strategy, allocated $20 million in Fiscal Year 2015/16 from the Ontario Green Investment Fund to support the build-out of a network of public electric vehicle (EV) charging stations across Ontario. Referred to as Electric Vehicle Chargers Ontario (EVCO) Program, the program was a one-time competitive application-based grant program designed to cover the purchase and installation cost of public fast-charging stations for EVs along major inter-city transportation corridors and in urban centers (including workplaces, apartments, condominiums, etc.) across the province.

EVCO application rules opened on December 21, 2015, and the deadline for applications was Friday, February 12, 2016.

As anticipated by many, the market for EVs has been one that can be characterized as slow but steady growth due to the fundamental changes that are required in vehicle technology, energy use and driver behaviour. City staff, London Hydro and a number of local and regional businesses and community groups have been tracking and participating in the growth of the EV market. The Provincial Program is designed to further accelerate this growth.

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 Community CarShare location, but the other two remain in operation.

London's Community Energy Action Plan has a transportation-specific goal to decrease the amount of petroleum-based fuel used per capita by 15 percent from 2012 levels by 2018. EVs are anticipated to be a small but important part of this goal.

In 2014 and 2015, Pollution Probe developed the Electric Mobility Adoption and Prediction (EMAP) initiative as a predictive analytical tool to help utility companies prepare for the expected increase in demand for EV charging in their communities. EMAP included work in ten cities (Toronto, Ottawa, Hamilton, St. Catharines, London, Markham, Richmond Hill, Vaughan, Calgary and Edmonton). London Hydro was the lead agency locally with participation from the City of London, Western University and Fanshawe College.

In 2015, the City of London and London Hydro entered in to an occupancy agreement allowing London Hydro to install and operate an EV charging station with battery storage the Canada Games Aquatic Centre. This EV charger and storage combination system is supported by the Ministry of Energy's Smart Grid Fund. This system is anticipated to enter into service in the spring of this year.

DISCUSSION

An Overview of Electric Vehicle Chargers

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

- "Level 1" - a 120 volt alternating current (AC) standard wall outlet;
- "Level 2" - a 208 – 240 volt AC outlet, similar to the heavy-duty power supply used for an electric oven or clothes dryer; and
- "Level 3" – a 480 volt direct current (DC) vehicle charger capable of recharging an "empty" EV battery to 80 percent of capacity within 15 to 30 minutes.

To date, there are nine publicly-available Level 2 EV charging stations in London, as shown on the map in Appendix A.

Electric Vehicle Chargers Ontario Program (EVCO)

Because the EVCO Program was launched by the Ontario Ministry of Transportation (MTO) on December 21, 2015, and with the application deadline of February 12, 2016, it left very little time to explore this opportunity with a systematic approach.

The core of the program is focused on the establishing a province-wide network of Level 3 chargers. In particular, the MTO expressed an interest on locations in close proximity (within 1 kilometre) of the 400-series highways to serve as the backbone of the desired Inter-city EV charging network. In-city locations at major trip attractors, such as retail, hospitality, and recreation locations was considered. With this network of "high speed charging stations" (i.e., getting much closer to time required to fill a gasoline vehicle) in place across the province, it is hoped that that the "range anxiety" barrier to EV adoption will be lowered.

In the first week of January 2016, discussions were held with London Hydro staff which identified two known proponents interested in London locations - Sun Country Highway and Plug'n'Drive Ontario. Different approaches were being taken by these two proponents.

Sun Country Highway's approach was to provide technical support for individual locations interested in applying to the EVCO Program. City of London and London Hydro staff had discussions with Sun Country Highway staff, and City staff introduced Sun Country to property management staff for White Oaks Mall. In total, Sun Country Highway supported two local EVCO applications in London – White Oaks Mall and Best Western Stoneridge Inn; both applications focused on the 401 Highway.

Plug'n'Drive's approach was to act as the lead proponent for a large, province-wide EV charging network. Plug'n'Drive application was supported by a technology and equipment suppliers, a consortium of 18 electricity distribution companies (including London Hydro), and several larger organizations. This one application alone proposes 95, Level 3 charger locations, 749, public Level 2 charger locations, and 89, workplace Level 2 charger locations across Ontario with a total proposed cost over $16 million equal to 80 percent of the available EVCO funding. London proposed locations within the Plug'n'Drive application are illustrated on the map in Appendix A and include 3 locations with Level 3 & 2 chargers and 8 locations with Level 2 chargers.

The Plug'n'Drive application is also being coordinated with the application being made for the ONroute service centres along the 400 series highways, which is proposing an additional 23, Level 3 chargers at these ONroute locations.

Given the scale and scope of these known applications, City staff suspect that the EVCO Program will be oversubscribed, and that MTO will need to pick and choose from the range of applicants to achieve a balance in terms of EV charger locations across Ontario as well as proponents selected. For example, the MTO will likely need to choose between White Oaks Mall and the competing Canadian Tire location next door for the Level 3 charger location.

As a result of these factors, City staff took the position of opting out of the workplace offering in order to focus on providing one public location in the downtown core – the London Convention Centre municipal parking lot – to the Plug'n'Drive consortium to increase the likelihood that location would be selected and to reduce competition with London's private-sector led applications.

Role of London Hydro
As a member of the Plug'n'Drive consortium, London Hydro has been and will be providing in-kind engineering and technical support to facilitate the electrical connection of the new load associated with these chargers should they be selected by the MTO. London Hydro also proposed, through Plug'n Drive's application, the installation of 2, Level 2 chargers for public use in their visitor's parking lot (as workplace application).

London Hydro will also be offering the same supporting services to other EVCO applicants, such as the White Oaks Mall and Best Western Stoneridge Inn locations being supported by Sun Country Highway, should they have successful applications.

Role of City of London – London Convention Centre
If successful, the London Convention Centre charging stations will be installed at no cost to the City of London nor the London Convention Centre. The charging stations will be located in the municipal pay parking lot at 299 King Street. Owners of EVs charging at this location will be expected to pay for parking using the existing City of London parking payment kiosk. The application included 1, Level 3 and 2, Level 2 chargers in this parking lot.

For the first five years of operation, charging will be free courtesy of Ontario Power Generation. After that, it is expected that the operator of the charging stations will either establish a separate EV charging payment system or every site owner would be offered to have the ownership of the equipment (and operation) transferred onto them for an insignificant cost (about $1).

The City of London will provide assistance with education and awareness working in collaboration with other local partners.

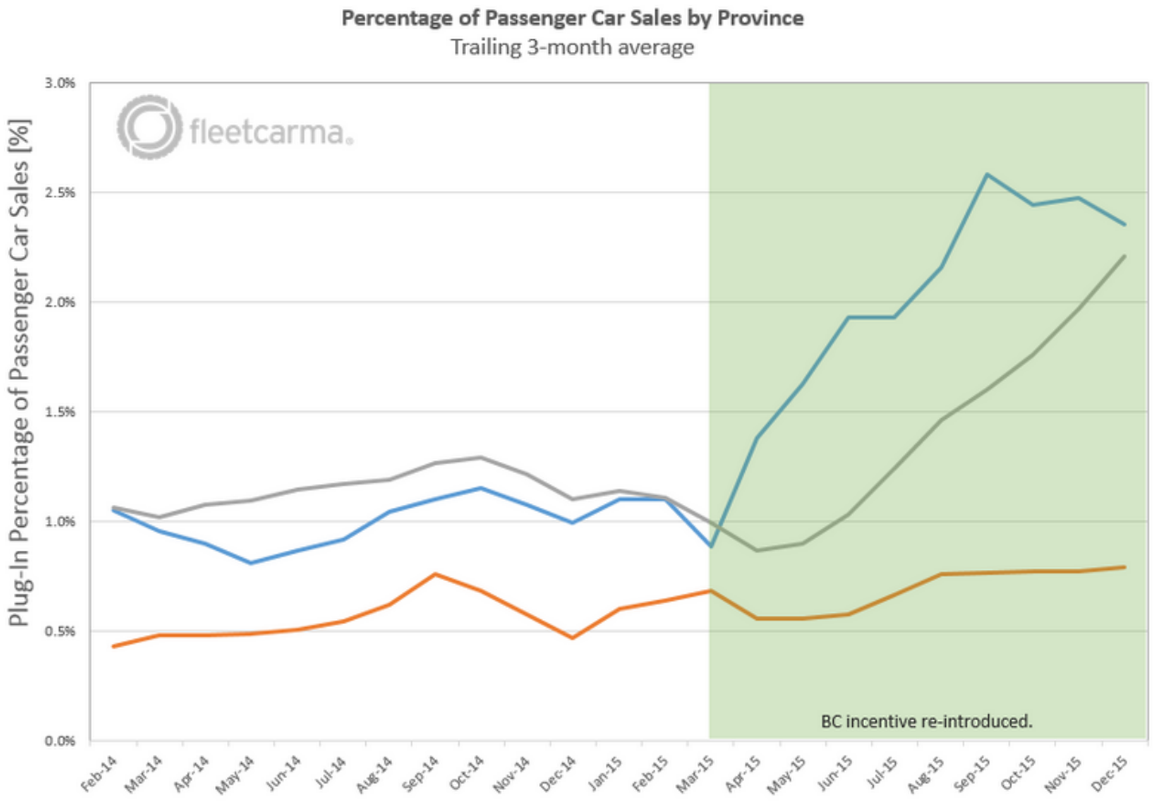
Timeline and Next Steps
The MTO has provided the following timeline for the EVCO Program:

Activity	Deadline
Application Deadline	February 12, 2016
Recipients announced	February/March 2016 (Estimated)
Agreements finalized with MTO	March 2016 (Estimated)
Charging stations in operation	By March 31, 2017

If successful, the City of London will need to enter in to a Host Site Agreement with Plug'n'Drive and its capital and operating partners for the use of the municipal pay parking lot at 299 King Street.

Should the location be selected, then a Host Site Agreement would need to be signed after it has been reviewed by Legal Services and Risk Management. The term of the Host Site Agreement is proposed to be for a minimum period of five years from the installation date. These details would be subject of a further Committee report.

Future Action on EV Charging Infrastructure
As discussed above, it is expected that the EVCO Program will receive far more applications than can be covered by the program's $20 million budget. It is not known whether the MTO will contemplate a second call for proposals, although it is likely that this would not take place until the EVCO Program's initial network of charging stations are in operation in 2017 and station demand is assessed. Future plans for EV charging also depends upon the public's uptake of EVs. In 2015, EVs represented about 0.8 percent of all new passenger cars sold in Ontario. This is lower than the sales figures in British Columbia and Quebec, where EVs accounted for over two percent of sales. With Ontario's recent announcement increasing the EV purchasing incentive up to $10,000, it is possible that demand in Ontario could increase to those levels seen in BC and Quebec as noted below.



Source: Fleet Carma

Why the Provincial Support for EVs?
From the Province on Ontario's perspective, EVs provide other benefits in addition to reducing greenhouse gas and smog-forming emissions. Most EV charging is expected to take place at the EV owner's home overnight, a period of low power demand when Ontario's electricity grid has an excess of supply – sometimes to the point where Ontario (and rate payers) pay other jurisdictions to take our surplus electricity. The electrification of transportation will help alleviate this situation.

CONCLUSIONS:

The EVCO Program has the potential to increase public uptake on EVs through the provision of fast-charging stations that help alleviate range anxiety concerns. The partnership with London Hydro and other organizations within and outside of London helps to identify, promote and encourage EV use to support Ontario's target to reduce greenhouse gases from the transportation sector. This initiative supports Council's Strategic Plan including the Community Energy Action Plan (CEAP) and London's Energy Connections Program.

ACKNOWLEDGEMENTS:

This report was prepared with assistance of Steven MacDonald, P.Eng., Corporate Energy Management Engineer, and Cristina Terek, P.Eng., Distribution Engineer at London Hydro.

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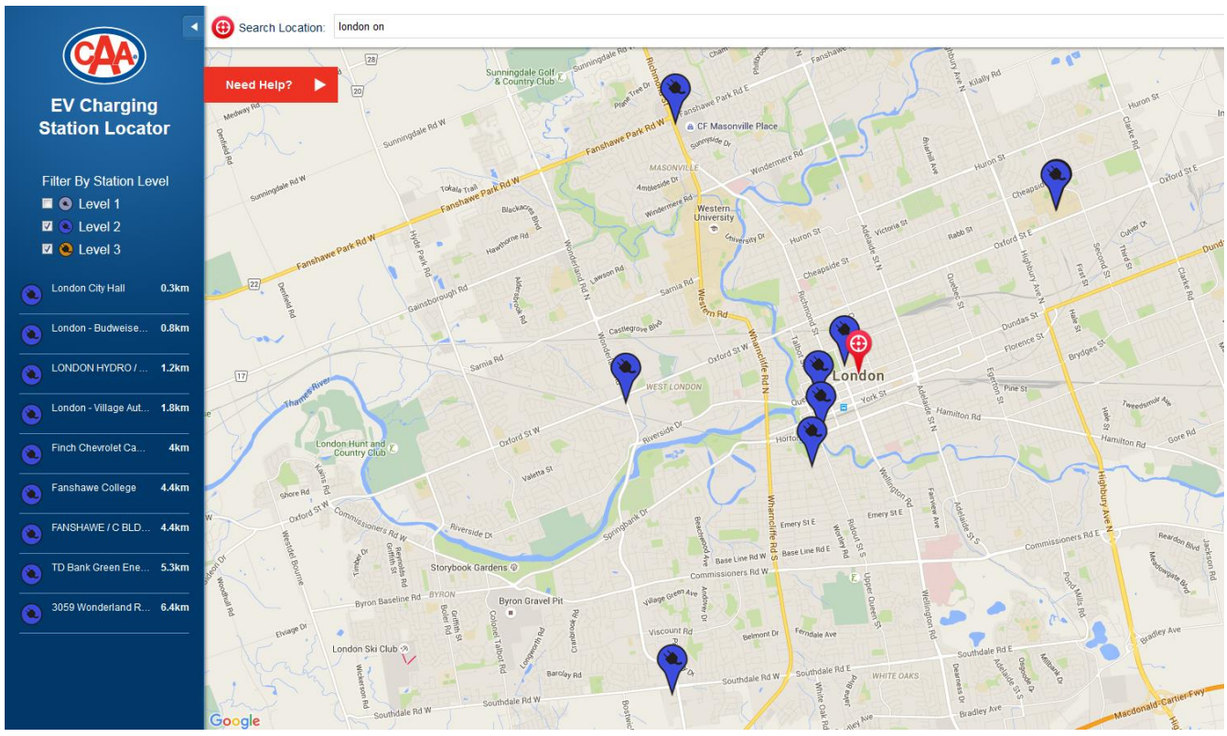
Appendix A Map of Current Charging Locations and Proposed Charging Lcoations for Electric Vehicle Charging Stations in London, Ontario

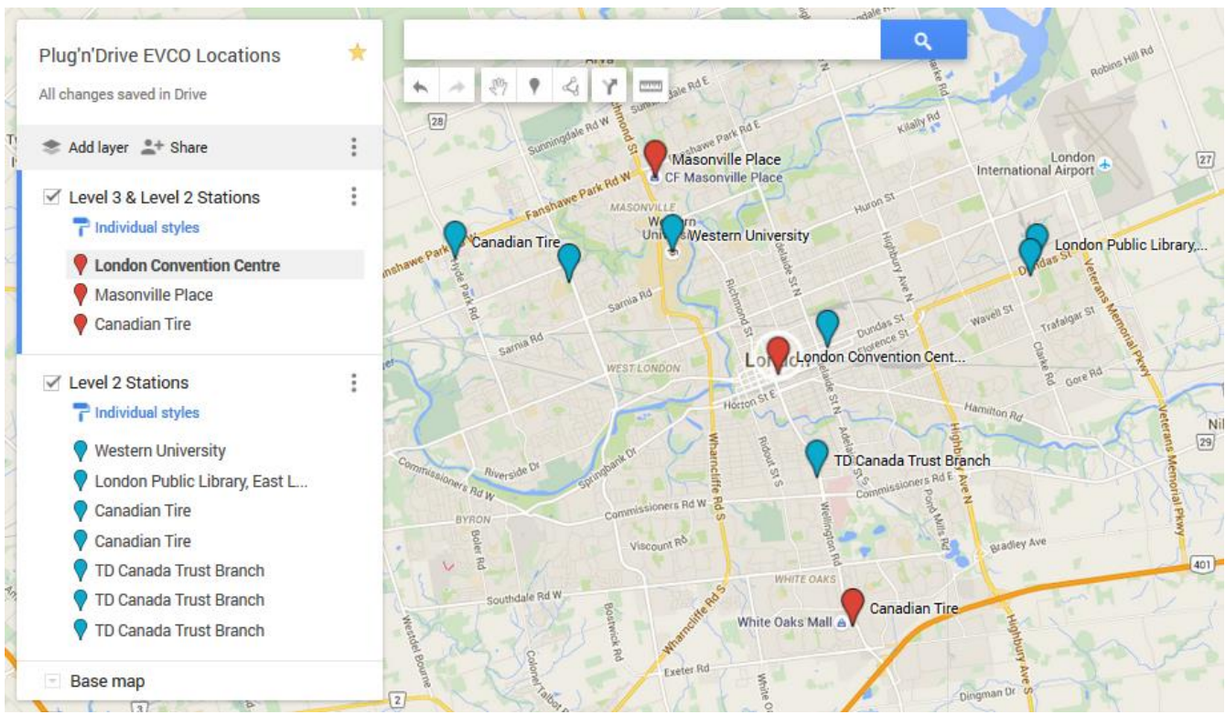
c Edward Soldo, Director, Director - Roads and Transportation
Kate Graham, Director, Community and Economic Innovation
Lori DaSilva, CEO and General Manager, London Convention Centre
Vinay Sharma, CEO, London Hydro

APPENDIX A

Map of Current Charging Locations and Proposed Charging Lcoations for Electric Vehicles Charging Stations in London, Ontario



Source: CAA EV Charging Station Locator



Source: Plug’n’Drive Proposed Locations as Part of EVCO Submission

Note: London Hydro also proposed, through Plug'n Drive's application, the installation of 2, Level 2 chargers for public use in our visitor’s parking lot (as workplace application)