



REGION OF WATERLOO

CORPORATE RESOURCES Facilities Management and Fleet Services

TO: Chair Tom Galloway and Members of the Administration and Finance Committee

DATE: May 28, 2013

FILE CODE: D06-80

SUBJECT: LOCAL ELECTRIC VEHICLE CHARGING STATIONS

RECOMMENDATION:

For Information

SUMMARY: Nil

REPORT:

In recent years, numerous plug-in electric vehicles (EVs) have been brought to the consumer market by several different auto manufacturers. Nationally there are estimates ranging from 150,000 – 600,000 EVs to be on the road in Canada by the year 2020 which is generally seen as an opportunity for green economic development and related technology advancement. In Ontario, this also represents a shift to a more sustainable means of meeting a portion of the energy demand for transportation by moving away from fossil fuels such as gasoline and diesel towards the many renewable power sources utilized within Ontario's electricity grid (e.g. hydro, wind, solar).

The federal government and the automotive industry are investing millions of dollars into research and development for the electrification of transportation. Ontario's provincial government also provides rebates and incentives to support the consumer market adaptation of EVs. There are several Canadian manufacturers of EV charging station equipment as well as local auto dealerships offering an increasing number of EV makes and models. Research shows that government subsidized charging stations initially helps to start a more community-wide development of public EV charging infrastructure as other institutional and private sector stakeholders become more involved. Municipalities can play an important role at the community level in this regard.

A increasing number of municipalities are supporting the evolving consumer market for EVs by directly or indirectly providing public EV charging stations. At least eight communities in southern Ontario have now installed multiple EV charging stations available to the public including but not limited to Toronto, Durham Region as well as the Cities of Guelph, Hamilton and London. Quebec and B.C. are also leading the way in establishing public EV charging infrastructure within developed urban settlement areas. Although the majority of charging personally owned EVs takes place at an individual's residence, public plug-in charging stations provide top-up charge opportunities at various local destinations around the community (e.g. malls, recreation facilities, museums). This helps to reduce what is referred to as "range anxiety" by enabling EV drivers to further extend their battery power range and thereby to carry out more activities around the community, in many cases with zero tailpipe emissions. Some municipalities are also recognizing this as a means to help meet their community GHG reduction targets. Locally, transportation emissions from the consumption of gas and diesel fuel accounts for over 40% of greenhouse gases in Waterloo Region.

The Region of Waterloo has already proactively supported three different EV projects with the Community Environmental Fund (CEF) since early in 2012. These projects include:

- Grand River Carshare – enabling their purchase of an EV and provision of a charging station on Regional property for their exclusive use (behind 150 Frederick Street);
- University of Waterloo Institute for Sustainable Energy (WISE) – promoting and researching the use of EVs within the Region by partnering with seven different local auto dealerships who sell these specialized vehicles, and;
- Conrad Grebel College – installation of a publicly accessible charging station off Westmount Road in Waterloo.

Regional staff have recently conducted a local scan of EV charging stations and out of the 13 known sites, only two are fully accessible to the public (including the CEF projects mentioned above). The other 11 charging stations have restricted access limited to company fleet vehicles, or staff and clients of different local organizations on private property. As a means to stimulate development of more publicly accessible EV charging stations within the community, the Region can demonstrate leadership with the installation of a few stations at appropriate Regional facilities and by encouraging other local stakeholders to host public charging stations as well. Staff has researched how other communities in Canada and the United States have developed their local public EV charging infrastructure in terms of criteria used to identify suitable general locations for the charging stations. Criteria that had the potential to optimize a station site's usefulness to the EV driver were used as a preliminary screening mechanism for consideration of Regional facilities as potential host locations.

Out of the Region's portfolio of facilities, three potential sites have been identified that meet the screening criteria which includes one in each of the three local cities as follows:

1. The first installation is planned within the current calendar year at the Regional Museum on Huron Road in Kitchener.
2. The next station for potential installation in the next 6 - 9 months involves the uptown Waterloo parkade near 99 Regina Street in Waterloo subject to consultation with the City of Waterloo in the context of the Region's current partnership agreement for that facility.
3. The third station at 150 Main Street in Cambridge will be delayed until 2015 to coincide with a planned parking lot resurfacing at that site.

It is intended that these installations will utilize pay-per-use activation systems to help partially recover the capital costs of the infrastructure as well as associated operating costs. These sites will be treated as pilot projects to collect information such as usage statistics, operating costs and revenue and feedback from users for further analysis. Additional sites will also be explored in consultation with city staff in the context of their role of providing public parking lots. Region staff have already initiated discussions with Kitchener parking staff for the purposes of determining the feasibility of any future partnership involving lots or parking structures in the Kitchener downtown core.

Other stakeholders can also play an important role in expanding the local network of charging stations in the community. There has been some community interest in public EV charging stations expressed by current local EV owners, clients of city parking lots and the University of Waterloo. Initial contacts have been made with City staff at Cambridge, Kitchener, and Waterloo regarding this topic as well as the local electrical utilities. Although University of Waterloo is already actively engaged in this

endeavor, contact has not yet been made with the other local post-secondary schools who are also potential candidates to host charging stations. The stakeholder dialogue is still in the very preliminary stages and the next logical step is share the research information that Regional staff have collected to date in order to further engage more in-depth and collective discussions regarding opportunities and challenges with developing a community-scale network of EV charging stations.

In addition to city parking lots and post-secondary schools, big retail outlets can represent the next stage of development for a community-scale deployment of EV charging stations as they have abundant public parking, a high number of visitors and it presents an additional opportunity to optimize the length of time that their customers remain at their business premises (e.g. Tim Horton's in Oakville has recently installed an EV charging station). Ideally, from additional stakeholder consultation, other leaders will emerge along the lines of community-wide planning and engagement of potential EV charging station hosts. The Region can play an important role in facilitating this process.

Regional staff will ensure that relevant legal and liability considerations are incorporated into use of the Region's EV charging equipment and that appropriate signage is included with their installation. Staff will also work with Corporate Communications to promote awareness as new stations are established at Regional sites. Existing on-line programs are available to have these new charging locations appear within mapping applications for greater awareness amongst EV drivers. A progress update on installations, usage statistics of the charging stations and other local stakeholder involvement will be provided in 2014.

CORPORATE STRATEGIC PLAN:

Focus Area 1 - Protect and Enhance the Environment:

- Objective 2 – Reduce Greenhouse gas emissions and work to improve air quality

Focus Area 5 - Service Excellence

- Objective 6 - Strengthen and enhance partnerships with area municipalities, academia, community stakeholders and other orders of government

FINANCIAL IMPLICATIONS:

EV Charging stations suitable for public use in the community vary in cost but generally can be obtained for under \$10,000 each including installation and safety inspection. The capital cost to the Region for 3 stations would be less than \$30,000 and can be covered from existing Facilities Management budgets over the years 2013 - 2015. The estimated operating cost per charging outlet could range from \$500 - \$900 per year and includes the cost of electricity consumption (approximately equivalent to the retail cost of a cup of coffee per charge) as well as a subscription to on-line enabled pay-per use software enabling fee collection administered by a third party. There is very limited long-term experience with regard to maintenance costs for charging stations at this time but they are expected to be nominal.

The intent would be to charge visitors a fee for use of the Region's EV charging stations as a means of partial cost recovery. According to Ontario Energy Board regulations, the Region would not be allowed to directly charge a fee for the electricity consumption but can charge a flat or hourly fee to users similar to a parking fee. This fee could help offset some of the capital expense for the charging equipment as well as the operating cost.

OTHER DEPARTMENT CONSULTATIONS/CONCURRENCE:

Development of this report included consultation with the Corporate Leadership Team as well as staff from Finance, Legal and Risk Management.

ATTACHMENTS: None

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