

NO: **R121**

COUNCIL DATE: **June 11, 2012**

REGULAR COUNCIL

TO: **Mayor & Council**

DATE: **June 6, 2012**

FROM: **General Manager, Engineering
General Manager, Finance and Technology
Manager, Sustainability**

FILE: **EV Charging
Stations**

SUBJECT: **Application to Community Charging Infrastructure Fund to Support
Installation of Electric Vehicle Charging Stations**

RECOMMENDATION

The Engineering Department, Finance and Technology Department, and the City Manager's Department recommend that Council:

1. receive this report as information;
2. endorse the submission of an application to the Provincial Community Charging Infrastructure Fund for funding assistance of \$72,000, being \$4,000 for the installation of each of eighteen (18) Level-2 electric vehicle charging stations at civic facilities in Surrey as generally documented in this report; and
3. in support of the application, approve the allocation of up to \$108,000 from the City's Climate Action Revenue Incentive Program (CARIP) reserve as the City's contribution toward this project.

INTENT

The purpose of this report is to seek Council endorsement to submit an application to the Provincial Community Charging Infrastructure Fund for financial assistance to allow the installation of eighteen (18) Level-2 electric vehicle charging stations at City facilities, and in support of the application to obtain Council approval to use \$108,000 from the Climate Action Revenue Incentive Program (CARIP) reserve as the City's share of the costs of such installation.

BACKGROUND

At its Regular meeting on September 2008, Council approved the recommendations of Corporate Report No. R175;2008 thereby approving the Surrey Sustainability Charter as the overarching policy document for the City.

At its Regular meeting on October 14, 2010, Council approved the recommendations of Corporate Report No. R214;2010, thereby approving the City's Corporate Emissions Action Plan (CEAP). The CEAP identifies opportunities for the City to reduce energy consumption and greenhouse gas (GHG) emissions from the City's corporate operations. These opportunities include, among others, green procurement, energy retrofits across the City's infrastructure, and green vehicles and alternative fuels.

At its Regular meeting on December 7, 2010, Council considered Corporate Report No. R251;2010, titled "Application for Funding from the FCM Green Municipal Fund for the Development of a Community Energy and Emissions Plan" and approved the recommendations of that report, thereby endorsing an application to the FCM Green Municipal Fund for funding for the development of a Community Energy and Emissions Plan (CEEP). The application to the FCM was successful. The CEEP will include a vision, goals and actions to achieve targets for GHG emission reductions outlined in the Surrey Official Community Plan. These targets, which were included in the OCP in May 2010 to meet the provincial requirements of Bill 27, the *Local Government (Green Communities) Statutes Amendment Act*, include the following:

- A 33% per capita GHG reduction by 2020, excluding agriculture and industry; and
- An 80% per capita GHG reduction by 2050, excluding agriculture and industry.

During its Regular meeting on June 23, 2011, Council adopted the recommendations of Corporate Report No. R119; 2011, titled "Community Energy & Emissions Plan Update and Launch of the EnergyShift Brand", thereby, approving a Terms of Reference for the development of the Community Energy and Emissions Plan (CEEP). Council also endorsed the "EnergyShift" meta-brand for Surrey energy-related initiatives and the "Community EnergyShift" sub-brand to engage the public and stakeholders in the development of the CEEP.

Electric Vehicles and Market Uptake

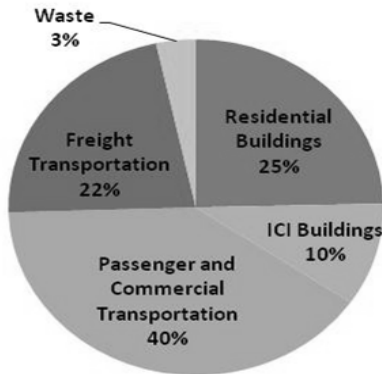
The Community Energy Association's *Primer on the Transition to Electric Vehicles in Metro Vancouver (2011)* includes the following statement:

In BC 90% of electricity generated is clean energy, and this makes electric vehicles (EVs) a viable option for reduction of GHGs. Plug-in electric vehicles (which are 100% plug-in electric) and plug-in electric hybrid vehicles (plug-in electric together with an internal combustion engine [e.g. Chevy Volt]) use electricity in whole or in part for power. High-performance batteries store the electricity on board the vehicles and use an electric motor to power the car. Given that BC [currently] has the highest adoption rate for traditional hybrid vehicles in Canada, this province is also expected to embrace electric vehicles. Major automakers are now introducing their first generation of plug-in models, and early forecasts suggest that 10% to 60% of vehicles purchased by 2025 will be plug-in hybrid electric, or all electric.

The Community Energy Association expects that by 2020, there will be 10,000 to 20,000 plug-in electric vehicles or PEVs across Metro Vancouver, and by 2030 this number will rise to 130,000. Based on current population estimates in the Lower Mainland, this could mean 2,000 to 4,000 plug-in electric vehicles in Surrey by 2020 and upwards of 26,000 by 2030. Regional growth in the electric vehicle market to 130,000 vehicles by 2030 would reduce GHG emissions across the Region by 6.5%.

Personal transportation accounts for 14% of all GHG emissions in the province. Almost half (45.3%) of GHG emissions from an average BC household are generated from personal cars and trucks. Currently in Surrey passenger and commercial transportation, and freight transportation together account for 62% of all community-wide emissions.

Emissions by Sector and Sub-Sector



Currently, the price of an electric passenger vehicle is approximately 60% higher than that of a similarly-sized standard gasoline engine vehicle. It is anticipated that as electric vehicle battery technology improves and as demand for electric vehicles increases, the price of EVs will compare more favourably with conventional gas engine vehicles.

Three Vehicle Recharging Station Levels

Three different levels of charging stations are available, each providing a different battery recharge time as documented below:

- Level 1: charges in 12 to 20 hours;
- Level 2: charges in 4 to 6 hours; and
- Level 3: charges in less than 30 minutes.

Below is the cost range for the procurement and installation of a charging station under each of these levels:

- Level 1 = \$1,000-\$2,000
- Level 2 = \$7,000-\$12,000
- Level 3 = \$65,000-\$100,000

Provincial Support & Community Charging Infrastructure Fund

A principal disincentive to electric vehicles currently relates to driver concern about the availability of battery recharging due to a lack of accessible charging infrastructure. It is considered important that charging infrastructure be available in a variety of locations to foster growth in the electric vehicle market, which as mentioned previously has healthy outcomes in relation to GHG emissions.

A number of provincial incentive programs have been announced to encourage growth in electric vehicle uptake. Clean energy vehicle incentives are currently available to help defray the purchase cost of qualifying new battery electric, fuel cell electric, plug-in hybrid electric and compressed natural gas vehicles. Another program provides for rebates of up to \$500 to homeowners who install dedicated Level-2 charging stations in their homes.

In April 2012, the Province announced funding in the amount of \$2.74 million for the Community Charging Infrastructure Fund (CCIF). This Fund, which is managed by the Fraser Basin Council, will provide both planning and infrastructure grants to local governments and other public/private entities to support the installation of 570 public Level-2 EV charging stations across the province by March 31, 2013. Half of the funding will be allocated to stations in the Lower Mainland and the Capital Regional District. For the installation of charging stations, the Fund will provide up to a maximum of \$4,000 per charging station subject to the applicant funding at least 25% of the cost of each station.

The Province stated it will also assist in expanding the Green Highway, a network of DC Fast Charge stations from B.C. to California which will allow electric vehicle owners to recharge their vehicles in approximately 15 to 20 minutes. The first three Level-3 DC Fast Charging Stations will be deployed in the coming months; one each at Science World in Vancouver, at Squamish and at Whistler. The Province is planning to install an additional 27 Level-3 DC Fast Charging Stations throughout BC in the future. Funding details in this area have not yet been released, however City staff is examining potential opportunities to install a DC Fast Charge station in Surrey at a location near Highway 99 to serve as the Surrey element of the Green Highway.

Preferable Locations for Charging Stations

In a recent workshop facilitated by the Community Energy Association, the following locations were deemed as preferable locations for EV charging stations:

- Community or recreation centres;
- Area of employment density;
- Areas of high residential density;
- Areas of high visibility, including iconic destinations; and
- Local retail centres, regional town centres and retail corridors.

DISCUSSION

Staff is proposing that the City make application to the CCIF for the installation of up to 18 public Level-2 charging stations at 11 City-owned facility sites across the City. The proposed locations include the new Surrey City Hall (8 stations), recreation centres (6 stations), Surrey Arts Centre and Surrey Museum (2 stations), and libraries (2 stations) as illustrated on the map attached as Appendix "A".

Up to five EV stations at New City Hall would service existing and potential future fleet EVs; the additional three stations would be dedicated for public use. Further, if the City fleet does not require the full complement of five stations then these stalls would be available for public use. All eight proposed stations would be located on Level 1 parking. It should be also noted that Level 2 parking will have conduit work completed for future EV charging station expansion.

This would form a viable first phase of a vehicle charging network across the City. These sites would allow staff to test the reliability of charging infrastructure and to analyze issues such as costs, pay-for-use options, potential vandalism, general maintenance and operation costs (for electricity and part replacement), signage, service network options, public usage and demand for additional stations. As length of stay is critical to charging an electric vehicle, locations were selected where patrons would likely stay for a sufficient period of time to allow their vehicle to charge.

Costs

It is estimated that the capital cost to install each Level-2 charging station would be \$10,000, which includes procurement, and installation including all electrical wiring, conduit and ground work. As such, it is estimated that the cost to install 15 Level-2 charging stations would be \$180,000.

As noted previously, up to \$4,000 per station is available from the CCIF. For 18 stations this would amount to \$72,000. The City would be responsible for the remainder of the costs or a contribution of up to \$108,000.

Funding

It is proposed that funding in support of the City's share of the costs (i.e., up to \$108,000) for the 18 charging stations be allocated from the Climate Action Revenue Incentive Program (CARIP) reserve, which is funded from the carbon tax rebates that the City receives from the Province.

Regional Planning Efforts

Through the Regional Engineers Advisory Committee – Climate Protection Sub-Committee (REAC-CPS), Metro Vancouver has initiated a regional planning process to ensure a more comprehensive regional network of EV charging stations in Metro Vancouver. Staff supports this regional planning initiative, which would complement the City's investment in charging stations and allow for an accelerated transition to EVs in the Region.

SUSTAINABILITY CONSIDERATIONS

The installation of EV charging stations in Surrey will assist in achieving the objectives of the City's Sustainability Charter; more specifically,

- Action EN11, Surrey's Commitment to the Climate Change Action Plan, including local strategies to reduce GHG emissions and energy use;
- Action EC8 Energy Security; including the City planning infrastructure that will reduce reliance on fossil fuels; and
- Action EN15; supporting sustainable transportation services and options.

CONCLUSION

Based on the above discussion, it is recommended that Council:

- endorse the submission of an application to the Provincial Community Charging Infrastructure Fund for funding assistance of \$72,000, being \$4,000 for the installation of each of eighteen (18) Level-2 electric vehicle charging stations at civic facilities in Surrey as generally documented in this report; and
- in support of the application, approve the allocation of up to \$108,000 from the City's Climate Action Revenue Incentive Program (CARIP) reserve as the City's contribution toward this project.

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General Manager, Engineering

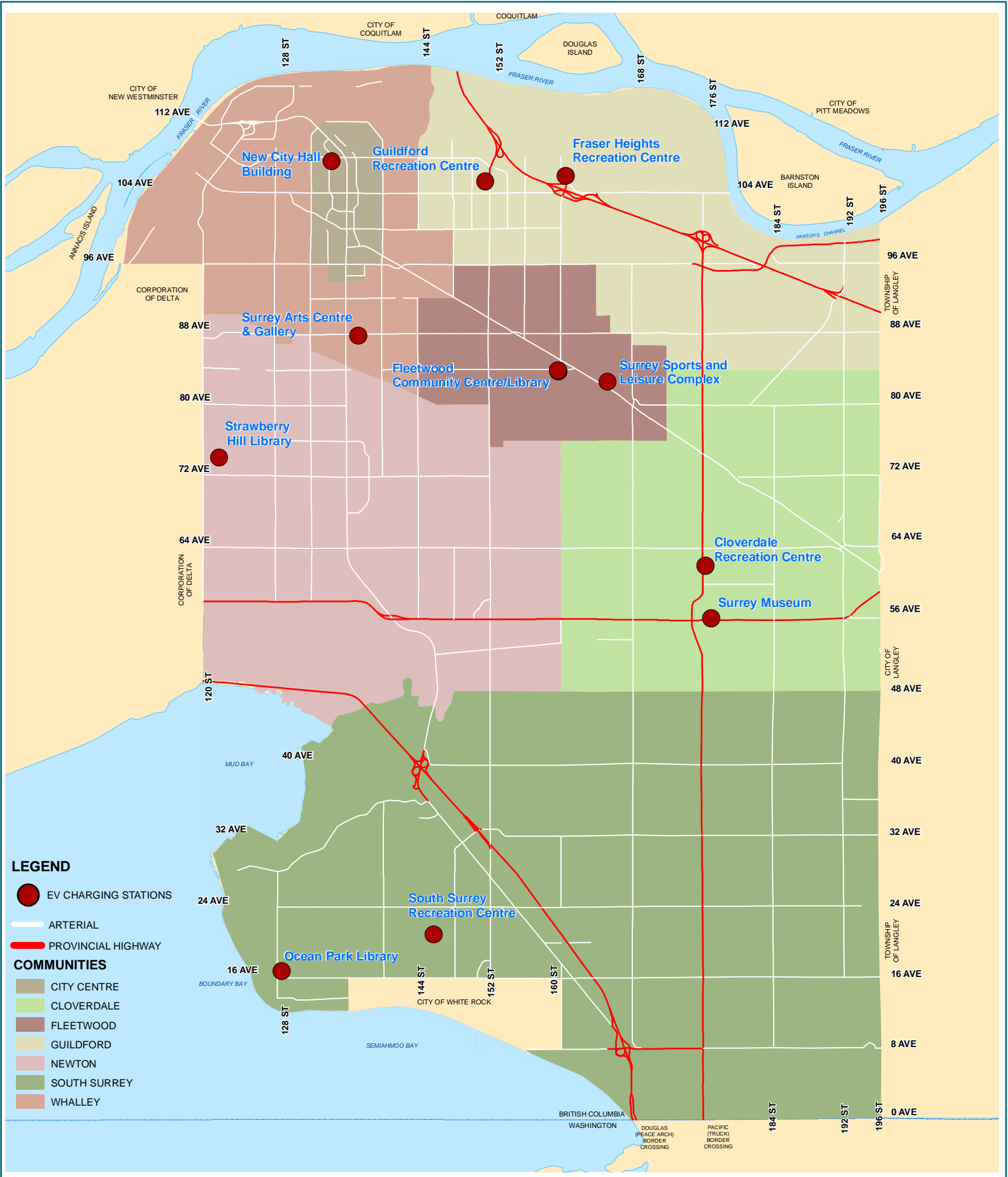
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Appendix "A": Map Illustrating the Location of Proposed Electric Vehicle Charging Stations



LEGEND

- EV CHARGING STATIONS
- ARTERIAL
- PROVINCIAL HIGHWAY

COMMUNITIES

- CITY CENTRE
- CLOVERDALE
- FLEETWOOD
- GUILDFORD
- NEWTON
- SOUTH SURREY
- WHALLEY