





CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Corporate Asset Management Division
and
Corporate Facilities and Energy Management Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	October 2, 2023
SUBJECT/REPORT NO:	Electric Vehicle Charging Station Infrastructure (PW23064) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Tom Kagianis (905) 546-2424 Ext. 5105 Kristina Zukauskas (905) 546-2424 Ext 3128 Robyn Ellis (905) 546-2424 Ext. 2616
SUBMITTED BY:	Patricia Leishman Director of Corporate Asset Management Public Works
SIGNATURE:	
SUBMITTED BY:	Indra Maharjan Director of Corporate Facilities & Energy Management Public Works
SIGNATURE:	

RECOMMENDATION

- (a) That project budget for Electric Vehicle Charging Station Infrastructure be increased by \$1,351,000 with \$534,000 to be funded from the Climate Change Reserve (108062), \$142,000 to be funded from the Unallocated Capital Levy Reserve (108020) and \$675,000 through a grant application to National Resources Canada as outlined in Appendix "A" to Report PW23064;
- (b) That, should our grant application not be successful, Staff be authorized to fund the remaining balance of \$675,000 from the Unallocated Capital Levy Reserve (108020) as outlined in Appendix "A" to Report PW23064;

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- (c) That the General Manager, Public Works, or their designate, be authorized and directed to pursue additional funding from other levels of government, including the authorization and direction to execute an amendment to the agreement between the City of Hamilton and Natural Resources Canada contribution agreement ZP-249 in a form satisfactory to the City Solicitor;
- (d) That the General Manager, Finance and Corporate Services, be authorized and directed to confirm the City of Hamilton's funding contribution is increased for the Electric Vehicle Charging Station Infrastructure Project, as outlined in Appendix "A" to Report PW23064, and sign a Proof of Funding Form and/or amendment to that effect, in accordance with the terms and conditions associated with the Zero Emission Vehicle Infrastructure Program contribution agreement ZP-249; and
- (e) That the City Solicitor be authorized and directed to prepare any necessary by-laws for Council approval, for the purpose of giving effect to the City of Hamilton's amendments to contribution agreement ZP-249 from the Zero Emission Vehicle Infrastructure Program for the Electric Vehicle Charging Station Infrastructure Project.

EXECUTIVE SUMMARY

At the Public Works Committee meeting on May 31st, 2021, Staff presented the Green Fleet Strategy Report & Action Plan (PW03147(e)) (City Wide), approved by Council June 9, 2021.

The report identified 18 electric vehicle charging station hub locations which aligned to the charging location requirements of the scheduled replacement of 89 internal combustion engine vehicles with electric vehicles.

During initial discussions, a budgetary amount of \$218k for electrical facility infrastructure upgrades was generated based on the best available information at the time.

The grant application included this budgetary infrastructure cost estimate of approximately \$218k. This budgetary estimate was based on a cost of \$141k for the electrical infrastructure to support the Level 2 Chargers plus \$77k for the electrical infrastructure to support the Level 3 Chargers, totalling \$218k, as summarized in Appendix "A" to Report PW23064. The estimate was based on the previously installed cost of Level 2 Stations at a city yards facility, which did not include all necessary infrastructure for the full site-specific scope of 49 new electric vehicle chargers being added at different locations.

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This is the first major Electric Vehicle Charger project undertaken by Staff. Staff are streamlining electrical building infrastructure process to support the electric vehicle charger installation process to avoid future process gaps. An improved process of budgetary estimates for electric vehicle charger facility infrastructure involves a comprehensive, site-specific look at building capacity, engineered drawings, where required, Class D estimates with contingency, and a competitive process for upgrading building infrastructure.

The selection of a vendor for the charging stations was accomplished via a competitive bid process through Procurement and their scope of work includes commissioning of the stations.

On August 8, 2022, Staff provided a progress report on the Green Fleet Strategy and Action Plan PW03147(f).

As part of the annual update it was reported that the City was a successful recipient of the Grant Funding for Electric Vehicle Charging Stations from National Resources Canada under the Zero Emission Vehicle Infrastructure Program. The electric vehicle charging station component of the Green Fleet Strategy including building infrastructure upgrades, was projected to cost \$600k and would result in the installation of a total of 49 charging stations. Originally, the Zero Emission Vehicle Infrastructure Program was set to fund \$300k with the City's 50% share to be funded via an Unallocated Levy Reserve (108020). However, these costs are now known to be significantly higher.

During the process of establishing the electrical infrastructure scope of work, additional infrastructure was identified, including:

- Installation of a new 100-amp breakers;
- Installation of conduit and wiring within each facility;
- Trenching;
- Installation of concrete pads;
- New transformers;
- Design and costs; and,
- Contingency.

Additionally, due to supply chain impacts the cost of the charging stations, installing of the stations and commissioning increased by approximately 16% for the Level 2 Station and 24% for the Level 3 Station.

The additional estimated cost is \$1.351M, as identified in Appendix "A" to Report PW23064. Upon acceptance of additional funds from National Resources Canada, the city's contribution may be reduced from 100% to 50%.

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In March 2023, the City executed a contract with Autochargers for the supply, installation and annual maintenance for 47, Level 2 Stations (2 plugs on each), and two, Level 3 Stations (1 plug on each) to be installed over the next 2.5 years.

Therefore, by way of this report, Staff are requesting to amend the National Resources Canada contribution agreement ZP-249 in the amount of \$1.351M, for the additional material and infrastructure costs. The Zero Emission Vehicle Infrastructure Program will fund \$675k with the City's 50% share to be funded via the Climate Change Reserve (108062) and an Unallocated Reserve account (108020).

Recent Council priorities have accelerated the City's current Climate Change Action Plan goal of a 50% reduction in total corporate greenhouse gas emissions from 2005 baseline by 2030, to achieve a 55% reduction by the end of 2026. This project also aligns with new council priority 1.2.1 around emission reduction.

Implementation of Battery Electric Vehicles offer the largest impact in reducing greenhouse gas emissions than any other option that is currently available in the automotive market. The City can realize a reduction of approximately 335 tonnes of greenhouse gas emissions annually by replacing the 89 SUV's, Compact Vans and Half Ton Pick Up Trucks that are scheduled for replacement with a fully electric option over the next 3 years.

Alternatives for Consideration – See Page 7

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: Schedule "1" in Appendix "A" to Report PW23064, outlines the revised Building Infrastructure and Charging Station costs requiring an additional \$1.351M in funding. It is anticipated that the grant opportunity will potentially fund up to \$675k. It is proposed that the City's portion would be funded \$534k from the Climate Change Reserve (108062) and \$142 from the Unallocated Capital Reserve (108020). Should the grant application through National Resources Canada not be successful, Staff proposes that the balance of \$675k also be funded from the Unallocated Capital Levy Reserve (108020).

Staffing: N/A

Legal: The City will be required to amend the contribution agreement ZP-249 to receive additional funds from the National Resources Canada, Zero Emission Vehicle Infrastructure Program grant funding and may need to enter into other ancillary agreements or pass by-laws to receive funding.

HISTORICAL BACKGROUND

In March 2019, Council approved a declaration that “a climate emergency exists that threatens the city, region, province, nation, civilization, humanity and the natural world.” In response, the City’s Green Fleet Strategy includes recommendations and alternative actions to reduce the City’s impact on our local environment, including the following, proposed by the Bay Area Climate Change Summit, and adopted by City Council on March 27th, 2019:

- Decommissioning all diesel vehicles by 2030; and,
- All vehicles be electrified by 2050.

On June 9, 2021 Council approved the Green Fleet Strategy Report & Action Plan (PW03147(e)) (City Wide).

The recommendation in the strategy report outlined the action plan to successfully transition to Battery Electric Vehicle’s, and the investment required for the Electric Vehicle Charging Infrastructure.

Grant funding for Electric Vehicle Charging Stations from National Resources Canada under the Zero Emission Vehicle Infrastructure Program was approved in May 2022. The Electric Vehicle Project with a total cost of \$600k would result in the installation of a total of 49 charging stations. At the time, the Zero Emission Vehicle Infrastructure Program agreed to fund \$300k with the City’s 50% share to be funded via an Unallocated Reserve account (108020).

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Corporate Energy and Sustainability Policy

The Green Fleet Strategy continues to dovetail with the Corporate Energy and Sustainability Policy with a strong focus on lower emission vehicles.

NOTE: Fleet and Transit contribute the most to the corporate emissions (49% based on 2018 emission data). The Green Fleet Strategy Action Plan will align to the Corporate Energy and Sustainability Policy targets and Fleet will report annually with an accompanying report to the Annual Energy Report.

RELEVANT CONSULTATION

The following departments provided input into the development of this report:
Corporate Services: Financial Planning, Administration and Policy Division, Legal Services Division and the Procurement Section of Financial Services

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External consultation included:

- Consulting Firm: Richmond Sustainability Initiatives provided a Green Fleet Strategy Report (attached hereto as Appendix “A” to Report PW23064);
- Charging Station providers for installation requirements and site preparation; and
- Consulting engineers to assist with budgetary numbers. Budgetary numbers are also based upon standard industry rates.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

Based on the Battery Electric Vehicle’s Replacement Schedule, staff worked with the operating departments to determine appropriate charging locations. Prior to the submission of the original grant funding request, Staff reviewed the planned vehicle replacements and strategically aligned the 18 hub locations. During this planning phase, staff consulted with subject matter experts to inquire on infrastructure upgrades, permits, electrical upgrade requirements and additional items for consideration including potential for future expansion. At the time of grant submission there was no indication of major infrastructure work.

Upon acceptance of grant funding and selection of the charging station vendor, Staff performed site visits to finalize locations of charging stations. It was decided the charging stations would be located in an area that was:

- Easily accessible to the electrical panel to minimize the amount of cable;
- The most cost-effective solution; and,
- In a location that was visible to the public to mitigate the risk of vandalism.

Further site visits performed included the City’s electrical contractor who identified the need to add transformers to all locations based on the required voltage required. The addition of transformers had a substantial impact on the infrastructure costs. The infrastructure costs in the original grant submission was budgeted at \$3k per Level 2 Station and \$38k per Level 3 Station, for a total \$218k. However, with the addition of the transformers and upgrades to panels, additional wiring, along with design and contingency the estimated infrastructure cost is significantly higher, as identified in Appendix “A” to Report PW23064.

Therefore, Staff have made minor modification to the list of locations, including exploring a postponement of charging station installation at Chedoke Yard and other changes to the original location & distribution of charging stations in order to minimize budgetary overage and minimize schedule impact. The National Resources Canada contribution agreement ZP-249 will need to be amended with the budget increase as identified in Appendix “A” to Report PW23064, for the additional material and infrastructure costs. The Zero Emission Vehicle Infrastructure Program will potentially

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fund up to 50% with the City's unfunded share to be funded via the Climate Change Reserve (108062) and an Unallocated Capital Levy Reserve (108020).

The strategies outlined in this report will be implemented at various times fully executed by 2024.

ALTERNATIVES FOR CONSIDERATION

Installing a smaller number of Electric Vehicle Charging Stations:

Installing fewer than 20, Level 2, and one, Level 3, Electric Vehicle Charging Stations, would result in the project being ineligible to be submitted under the Zero Emission Vehicle Infrastructure Program offered by National Resources Canada. It's anticipated that the Electric Vehicle Charging Station requirements will continue to increase in an effort to meet the current Green House Gas emission reduction targets.

Financial: 49 Electric Vehicle Charging Stations have already been purchased and therefore sunk costs are approximately \$422k. If the City installs fewer than 20, Level 2 and one, Level 3, Electric Vehicle Charging Stations, this will result in the City losing eligibility on the \$300k of grant funding the Zero Emission Vehicle Infrastructure Program.

Staffing: N/A

Legal: The City would not meet its obligations under executed contribution agreement ZP-249 to receive funds from the National Resources Canada, Zero Emission Vehicle Infrastructure Program grant funding.

Furthermore, if a reduced number of charging stations are available to support the increasing number of electric vehicles in the fleet, it is likely that staff would need to supplement use of City chargers with charging at public stations. This may require additional staff time, higher cost per kilowatt-hour expensed submitted by Staff, and possible security concerns with location of public charging station locations.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW23064 – Revised Building Infrastructure and Charging Station Costs