



# City of Richmond

## Report to Committee

**To:** Public Works and Transportation Committee **Date:** October 24, 2024

**From:** Chad Paulin **File:** 10-6125-01/2024-Vol  
 Director, Climate & Environment 01

Suzanne Bycraft  
 Director, Public Works Operations

**Re:** **Public Electric Vehicle Charging Network – Direct Current Fast Charging Expansion**

### Staff Recommendations

1. That the report titled “Public Electric Vehicle Charging Network – Direct Current Fast Charging Expansion”, from the Director, Climate & Environment and Director, Public Works Operations, dated October 24, 2024 be endorsed; and
2. That a capital submission for the Electric Vehicle DC Fast Charging Station Installations be submitted for Council’s consideration as part of the 2025 budget process.

Chad Paulin,  
 Director, Climate & Environment  
 (604-247-4672)

Suzanne Bycraft  
 Director, Public Works Operations  
 (604-233-3338)

Att. 2

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department	<input checked="" type="checkbox"/>	
Parks Services	<input checked="" type="checkbox"/>	
Recreation & Sport Services	<input checked="" type="checkbox"/>	
Facilities & Project Development	<input checked="" type="checkbox"/>	
Arts, Culture & Heritage	<input checked="" type="checkbox"/>	
Library	<input checked="" type="checkbox"/>	
Fleet	<input checked="" type="checkbox"/>	
<b>SENIOR STAFF REPORT REVIEW</b>	INITIALS: 	<b>APPROVED BY CAO</b> 

## Staff Report

### Origin

This report outlines a proposal to expand the City's public EV charging network by adding more direct current fast charging (DCFC) opportunities in key locations throughout Richmond, in a multi-phased approach.

Phase 1 of this expansion is proposed to include three sites, each featuring 8-10 DCFC charging ports for a total of 24-30 chargers. Each charger will have power output of 150-200 kW; capable of charging an EV up to 80% in less than 40 minutes. The Richmond Curling Club, Minoru Park precinct and South Arm Community Centre have been identified as the three proposed sites for Phase 1. Suitability of these sites is based upon surrounding housing types, population density and proximity to EV charging, ensuring optimal accessibility and utilization.

Staff are seeking Council endorsement of the DCFC expansion strategy as outlined in this report.

This report supports Council's Strategic Plan 2022-2026 Focus Area #2 Strategic and Sustainable Community Growth:

*Strategic and sustainable growth that supports long-term community needs and a well-planned and prosperous city.*

*2.4 Enhance Richmond's robust transportation network by balancing commercial, public, private and active transportation needs.*

This report supports Council's Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

*Leadership in environmental sustainability through innovative, sustainable and proactive solutions that mitigate climate change and other environmental impacts.*

*5.1 Continue to demonstrate leadership in proactive climate action and environmental sustainability.*

This report supports the implementation of Richmond's Community Energy and Emissions Plan (CEEP) 2050, and Official Community Plan emission reduction policies through:

### **Strategic Direction 2:** Transition to Zero Emission Vehicles

Action Category:  Build out a network of public EV charging stations at civic facilities to accelerate rate of local EV adoption

## **Analysis**

### Background

The City's public EV charging network has grown significantly over the past five years, currently comprising 53 Level 2 chargers and four Level 3 (DCFC) chargers for a total of 57 chargers. Of the 57 public chargers, 10 are accessible, Level 2 chargers, and 4 are accessible, Level 3 chargers. The City initially began installing EV chargers in 2013. The network experienced accelerating growth in electricity use for EVs after a 2018 expansion that added 47 chargers to the network. There was a temporary decline in usage from March 2020 to mid-2021 due to the COVID-19 pandemic, which also coincided with the introduction of charging fees. However, by late 2021, usage rebounded as pandemic restrictions eased and the number of EVs in Richmond continued to rise.

Less than a year after the DCFCs were installed, these four fast-charging ports accounted for over half of the total energy dispensed by the City's entire charging network, indicating a strong market preference for DCFCs. When Council first approved the EV charging expansion, installations of DCFCs were limited due to the electrical capacity of existing facilities, leading the City to focus on deploying more Level 2 chargers instead. Currently, more than 60% of the network's energy is dispensed through the DCFC ports. The Level 2 chargers, however, are still actively used and provide an essential service for users with plug-in hybrid vehicles or those parking for longer durations. A map of current City owned EV chargers can be found in Attachment 1.

Level 2 EV chargers typically deliver approximately 6 kW of power, which allows for a full charge in 6 to 12 hours, depending on the vehicle's battery capacity. In contrast, Level 3 DCFCs deliver much higher power levels, typically ranging from 50 kW to 350 kW, enabling EVs to charge up to 80% of their battery in under 40 minutes, making them ideal for quick, on-the-go charging. Staff have noticed a rise in service requests from residents seeking upgraded charging infrastructure, with a particular emphasis on Level 3 DCFCs.

The total power output of the 57 public charging ports is currently 600 kW. For Phase 1, staff are proposing to add an additional 3000 kW (3 MW) by installing 8-10 Level 3 DCFCs at each of the three city-owned facility parking lots (24-30 chargers), bringing the total output to 3.6 MW. This will further support the growing demand for EV charging in the city.

### Projected Expansion

2023 ICBC data reveals that over 30% of new car sales in Richmond are electric vehicles (EVs), a significant indicator of the city's rapid adoption of zero-emission vehicles (ZEVs). This trend is particularly evident in the City Centre area, where over 40% of EVs in Richmond are registered. This area, characterized by a high density of multi-unit residential buildings (MURBs), often lacks adequate private charging infrastructure, leading residents to rely on public charging options. As the number of EVs in Richmond continues to grow, driven by strong sales and increasing consumer interest, the demand for accessible public charging stations is expected to rise, particularly in densely populated areas like the City Centre.

This growing uptake aligns with both provincial and federal mandates aimed at accelerating EV adoption. The BC Zero Emission Vehicle Act, amended in October 2023, now requires 100% of new vehicle sales to be ZEVs by 2035, with interim targets set for 2026 (26%), and 2030 (90%). Similarly, the federal government's Electric Vehicle Availability Standard mandates a phased transition, requiring 100% of light-duty vehicles sold to be zero-emission by 2035. These regulatory frameworks, coupled with incentives like the federal Incentives for Zero-Emissions Vehicles program, will ensure that EV adoption continues to surge in the City, necessitating a reliable, robust and scalable charging network to meet current and future demand.

A recent report published by Metro Vancouver, titled "Keeping it Current: Guidance for Collaborative Deployment of EV Charging in Metro Vancouver", provides key insights into the future needs for public EV charging infrastructure across the region. The report includes modeling that estimates the number of public EV chargers required in each municipality to meet projected demand by 2035. In a low retrofit scenario for existing MURBs, Richmond is projected to need 208 DCFCs and 3,722 Level 2 chargers. Currently, Richmond has a total of 92 DCFCs, from various providers; however, 72 of these chargers are Tesla-specific. Tesla is slowly opening up their chargers for use by other vehicle brands, requiring vehicles to upgrade software and purchase adaptors in order to access the Tesla chargers.

### Site Selection Rationale

Sites were selected based on an analysis of surrounding housing types, population density, and proximity to existing chargers, ensuring that the new stations are accessible to a wide range of EV users and user accessibility. This approach maximizes the potential for high utilization, particularly in areas with a significant number of MURBs where home charging options are limited. Additionally, the selected locations are strategically distributed geographically to serve as much of the community as possible, ensuring equitable access to fast charging. The installation of DCFCs at the proposed locations could allow EV users to utilize the facilities while their vehicles are charging. This could provide further support to those using these sites and potentially encourage greater participation in programs and services, including those promoting physical activity and social connectedness.

Feasibility studies have been conducted with an engineering firm at all three sites to ensure viability. While BC Hydro will not confirm electrical capacity until a formal application is submitted, staff have selected sites where high voltage lines are available and close to the proposed locations of the chargers. These projects involve connecting to a dedicated 1.5 MW commercial-level pad-mounted transformer, which is a more complex and a higher-demand installation than a typical residential service upgrade. Should BC Hydro determine that an upgrade is not feasible at any site, one of the potential future sites would be selected for similar review and potential installation.

### Implementation Overview

The estimated timeline to complete Phase 1 is approximately three years. During this time staff will engage with BC Hydro for a new dedicated electrical service on each of the three sites, while simultaneously engaging with an engineering firm for detailed designs on the electrical system distribution for the EV chargers and associated equipment.

Staff are mindful of the challenges related to parking availability, particularly given the premium on parking spaces in key areas of the City Centre. To address this, the selected stalls for new charging stations have been strategically chosen based on their proximity to existing BC Hydro high voltage electrical lines, ensuring cost-effective installation, and will be located at the farthest distance possible from facility buildings to minimize any inconvenience to patrons. There are currently two accessible EV charging stalls at both the Minoru Park Precinct and South Arm Community Centre. Staff will explore the feasibility of adding an accessible EV charging stall at the Richmond Curling Club. Before proceeding with the installation of the chargers, staff will evaluate parking demand in each of the locations, engage with the community that use these sites and engage with community associations/societies that provide programs and services for the proposed sites. Information will be used to prepare potential measures to better define how we utilize stalls to ensure they are suitable locations for the chargers. Should any of the proposed Phase 1 sites be found to be unsuitable, staff will evaluate other potential sites noted in Attachment 2, and update Council accordingly.

Table 1 shows proposed funding sources on a total estimated cost of \$7 million for phase 1 expansion. The operating surplus resulting from the usage of the EV charging network will be used to repay the borrowed funds. Staff will apply for any available provincial or federal grant funding opportunities. The Low Carbon Fuel Standard (LCFS) credits that the City may receive in the future, including potential grant funding will also be utilized to repay borrowed funds.<sup>1</sup>

**Table 1: Phase 1 DC Fast Charger Expansion (three proposed sites)**

<b>Funding Source</b>	<b>Amount</b>
Gas Tax Provision	\$500,000
Carbon Tax Provision (Low Carbon Fuel Standard Credits)	\$500,000
Enterprise Fund	\$4,000,000
Internal Borrowing (Equipment Replacement Reserve Fund - Public Works Vehicles)	\$2,000,000
<b>Total</b>	<b>\$7,000,000</b>

Future phases under consideration are the new Steveston Community Centre and Library, Richmond Ice Centre, King George Park, and others. Staff will conduct feasibility studies for any potential site to ensure the projects are viable prior to bringing forward capital submissions in the future. A map of Phase 1 DCFC sites and potential future DCFC sites can be found in Attachment 2.

<sup>1</sup> On April 22, 2024, City Council approved recommendations in the report: Public Electric Vehicle Charging Network – Use of Proceeds from Low Carbon Fuel Standard (LCFS) Credits. Recommendation 2: That revenue from the sale of LCFS carbon credits be put into the City’s Carbon Tax Provision account and be reserved for capital and operating costs related to the installation and maintenance of new electric vehicle charging stations.

**Financial Impact**

A capital submission for the Electric Vehicle DC Fast Charging Station Installations project for \$7 million with the proposed funding sources shown in Table 1 above, will be submitted for Council's consideration as part of the 2025 budget process. Staff recommend that \$6.0 million of this project will be funded through a combination of the Equipment Replacement Reserve Fund - Public Works Vehicles (\$2.0M) and the Enterprise Fund (\$4.0M). The expected net revenue resulting from the usage of the EV charging network (OBI) will be utilized to repay both funding sources. The estimated OBI before repayment is \$670,000 per year. The current estimated payback period is nine years once the stations are open to the public. The estimated payback period can be shortened up to six years, subject to federal and provincial grant funding availability and the continuation of the provincial Low Carbon Fuel Standard (LCFS) credit program.

**Conclusion**

The City's Public EV charging network serves as a key element in the City's commitment to achieving emission reduction targets for transportation by 2030 and 2050 as outlined in the CEEP 2050. With increasing provincial and federal light duty vehicle sales targets leading to a higher number of EVs on the road, expansion of the City's public charging infrastructure represents foresight to meet this growing community demand and supports reducing community energy emissions overall.

A multi-phased expansion strategy, commencing with the installation of 24-30 Level 3 DCFC chargers at three city-owned parking lots, is proposed.



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Att. 1: City of Richmond Public Electric Vehicle Chargers

Att. 2: City of Richmond DCFC Expansion Phase 1 and Potential Future Phases

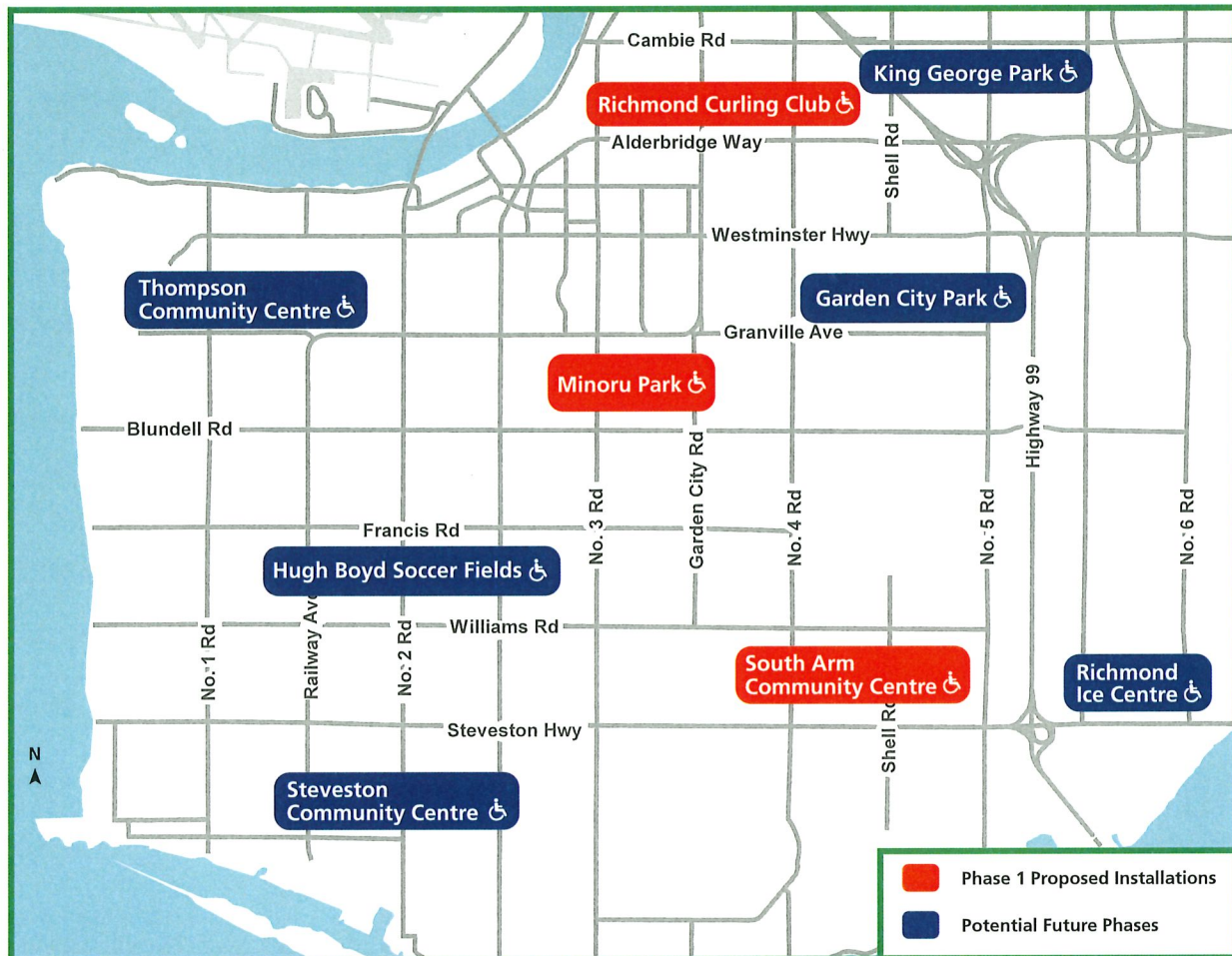
# City of Richmond Public Electric Vehicle Charging Stations



Public EV Charging Location	Address	Type of Station	
		Level 2 (L2)	Level 3 (L3)
Animal Shelter	12071 No. 5 Road	2	
Blundell Park	6468 Blundell Road	2 ♿	
Britannia Heritage Ship Yard	5180 Westwater Drive	2	
Cambie Community Centre	12800 Cambie Road	2	
Capstan Park	3311 Carscallen Road	2 🔧	
City Hall	6911 No. 3 Road	2 [+ 2 ♿]	[1 ♿]
City Public Works Yard	5599 Lynas Lane	2	
Fire Hall 3	9660 Cambie Road	2	
Garden City Park	6620 Garden City Road	2 ♿	
Garry Point Park	12011 Seventh Avenue	1	
Hamilton Community Centre	5140 Smith Drive	2 ♿	
King George Park	4100 No. 5 Road	2 ♿	1 ♿
Minoru Park			
Minoru Arenas	7551 Minoru Gate	4 ♿	
Minoru Centre for Active Living	7191 Granville Avenue	6	
RCMP City Centre Community Police Office	6931 Granville Avenue	2	
Richmond Ice Centre	14140 Triangle Road	2 ♿	1 ♿
Richmond Oval	6111 River Road	4	1 ♿
South Arm Community Centre	8880 Williams Road	2 ♿	
Steveston Community Centre	4111 Moncton Street	2	
Steveston Tennis Courts	4151 Chatham Street	2 ♿	
Thompson Community Centre	5151 Granville Avenue	2	
West Richmond Community Centre	9180 No 1 Road	2 ♿	

TOTAL AS OF SUMMER 2022 53 + 2 🔧 4

# City of Richmond DCFC Expansion Phase 1 and Future Sites



Phase 1 DCFC Proposed Installations	Address	Type of Station Level 3 (L3)
Minoru Park	7191 Granville Avenue	8-10
Richmond Curling Club	5540 Hollybridge Way	8-10
South Arm Community Centre	8880 Williams Road	8-10

Potential Future Phases		
Garden City Park	6620 Garden City Road	8-10
Hugh Boyd Soccer Fields	4038 Francis Road	8-10
King George Park	4100 No. 5 Road	8-10
Richmond Ice Centre	14140 Triangle Road	8-10
Steveston Community Centre	4111 Moncton Street	8-10
Thompson Community Centre	5151 Granville Avenue	8-10