SUSTAINABLE CITY ADVISORY COMMITTEE

NOTICE OF OPEN MEETING

DATE: **WEDNESDAY, 2017 NOVEMBER 01**

TIME: **6:00 PM**

PLACE: **Council Chamber, Main Floor, City Hall**

A G E N D A

1. CALL TO ORDER **PAGE**

2. MINUTES

a) Minutes of the Open meeting of the Sustainable City Advisory Committee held on 2017 September 06 — 1

3. PRESENTATION

a) Burnaby Transportation Plan Update and Consultation
Speakers: Lee-Ann Garnett, Assistant Director - Long Range Planning
Stu Ramsey, Manager - Transportation Planning
Renee De St. Croix, Senior Long Range Planner

4. CORRESPONDENCE

a) Correspondence from the Provincial - UBCM Green Communities Committee
Re: Recognition for Reducing Green House Gas Emissions in 2016 — 10

5. REPORT

a) Report from the Director Planning and Building
Re: Development of Electric Vehicle Policy for Burnaby — 13

6. NEW BUSINESS

7. INQUIRIES

8. ADJOURNMENT

SUSTAINABLE CITY ADVISORY COMMITTEE

MINUTES

An Open meeting of the Sustainable City Advisory Committee was held in the Council Chamber, main floor, City Hall, 4949 Canada Way, Burnaby, B.C. on Wednesday, **2017 September 06** at 6:00 p.m.

1. CALL TO ORDER

PRESENT: Councillor Sav Dhaliwal, Chair
Councillor James Wang, Member
Ms. Tessa Vanderkop, Burnaby Board of Trade
Trustee Gary Wong, Burnaby School Board
Ms. Lubna Abdelrahman, Citizens' Representative
Ms. Noreen Boudreau, Citizens' Representative
Mr. Bill Brassington Jr., Citizens' Representative
Mr. Peter Cech, Citizens' Representative
Mr. Frank Huang, Citizens' Representative
Ms. Mary Lumby, Citizens' Representative
Mr. Shiraz Nathwani, Citizens' Representative

ABSENT: Councillor Pietro Calendino, Member
Councillor Nick Volkow, Member *(due to illness)*
Mr. William Tsai, Citizens' Representative
Mr. Frank Zhao, Citizens' Representative

STAFF: Mr. Dipak Dattani, Deputy Director Engineering
Ms. Lee-Ann Garnett, Assistant Director Long Range Planning
Ms. Heather Edwards, Manager Parks Planning & Design
Ms. Margaret Manifold, Senior Social Planner
Ms. Lise Townsend, Ecosystem Planner
Ms. Nikolina Vracar, Administrative Officer

The Chair called the Open meeting to order at 6:05 p.m.

2. MINUTES

a) Minutes of the Sustainable City Advisory Committee Open meeting held on 2017 June 07

MOVED BY MS. BOUDREAU
SECONDED BY COUNCILLOR WANG

THAT the minutes of the Sustainable City Advisory Committee Open meeting held on 2017 June 07 be adopted.

CARRIED UNANIMOUSLY

3. PRESENTATION

MOVED BY MR. BRASSINGTON JR.
SECONDED BY MR. CECH

THAT the presentation be heard.

CARRIED UNANIMOUSLY

a) Dementia-Friendly Community Action Plan
Presenter: Margaret Manifold, Senior Social Planner

Ms. Margaret Manifold, Senior Social Planner, provided an overview of the Dementia-Friendly Community Action Plan.

Ms. Manifold advised that 25,000 new cases of dementia are diagnosed each year in Canada, and 2,800 of Burnaby residents have dementia. The number is expected to grow with an ageing population. The speaker noted that most residents with dementia wish to continue to live at home as long as possible.

Development of the Plan is consistent with the community inclusion, livability and resilience goals of the Burnaby's Social Sustainability Strategy and the City's ongoing age-friendly initiatives. The Plan was developed with support from the UBCM 2016 Age-Friendly Community Planning and Project Grants Program.

To create the Plan, the City formed a working group, and participated in consultations with focus groups, a walking interview and a community forum. Ms. Manifold acknowledged several working group members in the audience.

Recommendations within the Plan are organized in four key themes:

- People, knowledge and awareness (e.g. share information about dementia and resources);

- Things to do (e.g. promote and indicate programs that are inclusive of people living with dementia and their caregivers);
- Your surroundings (e.g. provide clear signage and wayfinding, landmarks and public art to create distinctive environments); and
- Advocacy (e.g. explore availability of adequate home health care and respite services).

Most of the recommendations include actions that can build on the existing initiatives.

The Committee inquired regarding availability of dementia resource materials in different languages, and specialized physical health programs in the City's recreational facilities for individuals with dementia.

Staff noted that the Alzheimer Society of B.C. provides resource materials in a variety of languages, and the City has specialized recreational programs which also allow caregivers to participate free of charge.

In conclusion, the Chair thanked staff and the working group members for their work, and noted that the Plan is part of an ongoing effort to create facilities, infrastructure and policies supportive of individuals with dementia.

MOVED BY MR. BRASSINGTON JR.
SECONDED BY MS. ABDELRAHMAN

THAT item 5(c) report regarding the Dementia-Friendly Community Action Plan be brought forward for consideration at this time.

CARRIED UNANIMOUSLY

5. REPORT

MOVED BY MS. BOUDREAU
SECONDED BY MR. CECH

THAT the Dementia-Friendly Community Action Plan report be received.

CARRIED UNANIMOUSLY

c) Report from the Director Planning and Building
Re: Dementia-Friendly Community Action Plan

The Director Planning and Building submitted a report presenting the draft Dementia-Friendly Community Action Plan.

The Director Planning and Building recommended:

1. THAT Council endorse the Burnaby Dementia-Friendly Community Action Plan.

2. THAT a copy of this report and the Burnaby Dementia-Friendly Community Action Plan be forwarded for information to:

    - Parks, Recreation and Culture Commission
    - Burnaby Public Library Board
    - Fraser Health
    - The Alzheimer Society of B.C.
    - The Voices of Burnaby Seniors
    - The UBCM Age-Friendly Community Planning and Project Grants Program

3. THAT a copy of this report and the Dementia-Friendly Community Action Plan be forwarded to members of the Burnaby Dementia-Friendly Working Group, along with a letter of appreciation from the Mayor acknowledging their participation on the working group.

MOVED BY MS. BOUDREAU
SECONDED BY MR. CECH

THAT the recommendations of the Director Planning and Building be adopted.

CARRIED UNANIMOUSLY

Normal order of the agenda resumed.

4. CORRESPONDENCE

MOVED BY MS. LUMBY
SECONDED BY MR. HUANG

THAT the correspondence be received.

CARRIED UNANIMOUSLY

a) Memorandum from the Deputy City Clerk Re: Expert Panel's Report on Modernization of the National Energy Board

A memorandum was received from the Deputy City Clerk advising that Council, at the Open Council meeting held on 2017 June 12, received and adopted the above noted report regarding the expert panel's report on modernization of the

National Energy Board. Staff report provides an overview of the panel's findings and recommendations, which are based on consultations with stakeholders across Canada.

b) Memorandum from the Deputy City Clerk
Re: 2016 Climate Action Revenue Incentive Program Report

A memorandum was received from the Deputy City Clerk advising that Council, at the Open Council meeting held on 2017 June 12, received and adopted the above noted report regarding the 2016 Climate Action Revenue Incentive Program (CARIP) report. Staff report provides information on the City's 2016 corporate greenhouse gas emissions inventory, and fulfills the annual CARIP grant requirement to report on the City's plan and progress toward meeting the City's climate action goals. Burnaby's 2016 CARIP reported corporate emissions were reduced by 3,022 tonnes as a result of the City's participation in municipal organic waste diversion.

c) Memorandum from the Deputy City Clerk
Re: Launch Activities for the Environmental Sustainability Strategy (ESS)

A memorandum was received from the Deputy City Clerk advising that Council, at the Open Council meeting held on 2017 June 12, received and adopted the above report regarding launch activities for the ESS. The City created "*My Green Pledge"* to celebrate the launch of the ESS, inspire residents and businesses to take action in support of the ESS, and spread the word by engaging residents through social media. Staff will continue to investigate other ways to engage the public.

d) Memorandum from the Director Planning and Building
Re: World Rivers Day 2017

A memorandum was received from the Director Planning and Building regarding World Rivers Day 2017. The event will take place on September 24 as a part of the City's Weekend of Fun and Burnaby's 125th anniversary celebration. World Rivers Day provides an opportunity for the public to learn about environmental stewardship of Burnaby's waterways.

The Committee inquired if more awareness regarding the World Rivers Day could be raised through Burnaby schools.

Staff noted that the Burnaby Village Museum promotes the event in a variety of ways, and undertook to follow-up.

e) Memorandum from the Director Planning and Building
Re: Burnaby Transportation Plan Update - Phase 1

A memorandum was received from the Director Planning and Building regarding Burnaby Transportation Plan Update – Phase 1. Council, at the Open Council meeting held on 2017 June 27, authorized staff to undertake public consultation in support of a renewed Burnaby Transportation Plan. Consultations began in mid-August and will extend to 2017 November 30. Information regarding the process, Council report initiating the process, and background information is available on the City's website (www.burnaby.ca/transportationplan). Staff will seek the Committee's input at the November Committee meeting.

The Committee inquired if the link to the Burnaby Transportation Plan consultation process can be posted under the "hot topics" on the City's website.

Staff undertook to follow-up.

f) Correspondence from the Society to End Homelessness in Burnaby
Re: Access to Showers for Burnaby's Homeless Citizens

Correspondence was received from Ms. Wanda Mulholland, Coordinator, the Society to End Homelessness in Burnaby, regarding access to showers for Burnaby's homeless citizens. Ms. Mulholland advised that a Society's representative will be unable to attend the Committee's September meeting, and the Society looks forward to receiving further information from the City on the issue.

The Chair advised that Ms. Mulholland has been informed that the matter falls under the jurisdiction of the Parks, Recreation and Culture Commission and to direct correspondence on the matter directly to the Commission.

5. REPORTS

MOVED BY MR. CECH
SECONDED BY MS. LUMBY

THAT the reports be received.

CARRIED UNANIMOUSLY

a) Report from the Director Planning and Building
Re: Environmental Sustainability Strategy (ESS) and Community Energy and Emissions Plan (CEEP)
Implementation Approach and Phase 1 Priorities

The Director Planning and Building submitted a report outlining an approach for implementation of the Environmental Sustainability Strategy and Community Energy and Emissions Plan.

The Director Planning and Building recommended:

1. THAT Council approve the implementation approach for the Environmental Sustainability Strategy and Community Energy and Emissions Plan, and Phase I policy priorities, as outlined in this report.

2. THAT a copy of this report be sent to the Planning and Development Committee, Financial Management Committee and Parks, Recreation and Culture Commission for their information.

MOVED BY MR. BRASSINGTON JR.
SECONDED BY MS. LUMBY

THAT the recommendations of the Director Planning and Building be adopted.

CARRIED UNANIMOUSLY

The Committee inquired regarding Metro Vancouver's initiatives for electric vehicles, leveraging 120W outlets, and establishing curbside charging stations.

Staff noted that Metro Vancouver has played a coordinator role on the issue but each municipality is adopting a specific approach. Further, the types and levels of electrical vehicle charging stations will be considered through policy development and analysis.

b) Report from the Director Planning and Building
Re: Update on the Burnaby Healthier Community Partnership for 2016-17

The Director Planning and Building submitted a report providing an update on the initiatives of the Burnaby Healthier Community Partnership for 2016-17.

The Director Planning and Building recommended:

1. THAT this report be received for the information of the Committee and Council.

2. THAT a copy of this report be forwarded to Dr. Aamir Bharmal, Medical Health Officer for Burnaby, Ms. Sheila Finamore, Executive Director, Burnaby Health Services, Ms. Baljinder Narang, School Trustee, Burnaby Board of Education, and Dr. Davidicus Wong, Burnaby Division of Family Practice.

MOVED BY COUNCILLOR WANG
SECONDED BY MS. ABDELRAHMAN

THAT the recommendations of the Director Planning and Building be adopted.

CARRIED UNANIMOUSLY

The Committee inquired regarding mental health supports for visible minorities impacted by war trauma.

Staff advised that Burnaby community service providers, through the Child and Youth Mental Health and Substance Use Collaborative, are working together to raise awareness regarding available services and to ensure that services are more accessible.

c) Report from the Director Planning and Building
Re: Dementia-Friendly Community Action Plan

This agenda item was dealt with previously in the meeting.

6. NEW BUSINESS

Lubna Abdelrahman

Ms. Abdelrahman advised that the first African Arabic and Muslim Mini Festival was a success. Further, Ms. Abdelrahman expressed interest in presenting information regarding violence against women in Arabic/African community at an upcoming Committee meeting.

7. INQUIRIES

There were no inquiries brought before the Committee at this time.

8. ADJOURNMENT

MOVED BY MR. BRASSINGTON JR.
SECONDED BY MR. CECH

THAT the Open meeting do now adjourn.

CARRIED UNANIMOUSLY

The Open meeting adjourned at 7:23 p.m.

Nikolina Vracar	Councillor Sav Dhaliwal
ADMINISTRATIVE OFFICER	CHAIR

GREEN COMMUNITIES
COMMITTEE

Ref: 206635

September 1, 2017

His Worship Mayor Derek Corrigan and Councillors
City of Burnaby
4949 Canada Way
Burnaby BC V5G 1M2

Dear Mayor Corrigan and Councillors:

On behalf of the joint Provincial-Union of British Columbia Municipalities (UBCM) Green Communities Committee (GCC), we would like to extend our congratulations for your successful efforts to undertake significant corporate or community-wide climate action to reduce GHG emissions in the 2016 reporting year.

As a signatory to the Climate Action Charter, you have demonstrated your commitment to work with the Province of British Columbia and UBCM to take action on climate change and to reduce greenhouse gas emissions in your community and corporate operations.

The work that local governments are undertaking to reduce their corporate emissions demonstrates significant climate leadership and sets the stage for broader climate action in the community. Your leadership and commitment continues to be essential to ensuring the achievement of our collective climate action goals.

The GCC was established under the Charter to support local governments in achieving their climate goals. In acknowledgement of the efforts of local leaders, the GCC is again recognizing the progress and achievements of local governments such as yours through the multi-level Climate Action Recognition Program. A description of this program is enclosed for your reference.

As a Charter signatory who has achieved Level 1 and Level 2 recognition, and demonstrated significant climate action (corporately or community-wide) to reduce GHG emissions for the 2016 reporting year, you have been awarded Level 3 recognition – 'Accelerating Progress on Charter Commitments'.

.../2

Copied to:
Sustainable City Advisory Committee (2017.11.01)

In recognition of your significant achievements, the GCC is very pleased to provide you with climate action community branding for use on websites and letterheads. An electronic file with the 2016 logo will be provided to your Chief Administrative Officer. Also enclosed is a *BC Climate Action Community 2016 – Climate Leader* window decal, for use on public buildings.

Congratulations again on your achievement. We applaud your leadership and wish you continued success in your ongoing commitment to the goal of corporate carbon neutrality, and your efforts to reduce emissions in the broader community.

Sincerely,

Tara Faganello
Assistant Deputy Minister
Local Government Division
Ministry of Municipal Affairs and Housing

Gary MacIsaac
Executive Director
Union of British Columbia Municipalities

Enclosures

GREEN COMMUNITIES COMMITTEE

GCC Communiqué on the Climate Action Recognition Program

B.C. local governments continue to play a critical role in reducing GHG emissions across the province. In acknowledgment of the ongoing efforts of local leaders, the joint Provincial-UBCM Green Communities Committee (GCC) is pleased to continue the Climate Action Recognition Program (*Recognition Program*) for B.C. local governments for the 2016 reporting year. This is a multi-level program that provides the GCC with an opportunity to review and publicly recognize the progress and achievements of each Climate Action Charter (*Charter*) signatory. Recognition is provided on an annual basis to local governments who demonstrate progress on their *Charter* commitments, according to the following:

Level 1: Demonstrating Progress on Charter Commitments
Local governments who demonstrate progress on fulfilling one or more of their *Charter* commitments will receive a letter from the GCC acknowledging their accomplishments.

Level 2: Measuring GHG Emissions
Local governments that achieve level 1, have completed a corporate carbon inventory for the reporting year and demonstrate that they are familiar with the Community Energy and Emissions Inventory (CEEI) for their community receive a letter from the GCC and a '*BC Climate Action Community 2016*' logo, for use on websites, letterhead, etc.

Level 3: Accelerating Progress on Charter Commitments (NEW this year)
Local governments that achieve levels 1 and 2 and demonstrate significant corporate or community-wide climate action to reduce GHG emissions in the reporting year receive a letter from the GCC and a '*BC Climate Action Community 2016 – Climate Leader*' logo, for use on websites, letterhead, etc.

Level 4: Achievement of Carbon Neutrality
Local governments that achieve carbon neutrality in the reporting year receive a letter from the GCC and a '*BC Climate Action Community 2016 – Climate Leader - Carbon Neutral*' logo, for use on websites, letterhead, etc.

To be eligible for the *Recognition Program,* local governments must fulfill the public reporting requirements of the Climate Action Revenue Incentive Program (CARIP) including reporting on their progress to carbon neutrality. The GCC will determine recognition levels for the *Recognition Program* based on the information included in each local government's annual CARIP public report. Further information on CARIP and the public reporting requirements is available online.

City of Burnaby

Meeting 2017 Nov 01

COMMITTEE REPORT

TO: CHAIR AND MEMBERS
SUSTAINABLE CITY ADVISORY
COMMITTEE

DATE: 2017 October 20

FROM: DIRECTOR PLANNING AND BUILDING

FILE: 76500 20
Reference: *Environmental Planning*

SUBJECT: DEVELOPMENT OF ELECTRIC VEHICLE POLICY FOR BURNABY

PURPOSE: To outline an approach for development of policy supporting electric vehicles in Burnaby in support of the approved Environmental Sustainability Strategy (ESS) and Community Energy and Emissions Plan (CEEP).

RECOMMENDATION:

1. **THAT** Council approve the scope and process for development of an Electric Vehicle (EV) Policy in support of Burnaby's approved ESS and CEEP, as outlined in this report.

REPORT

1.0 INTRODUCTION

Electric vehicles (EVs)[1] represent a small but rapidly growing segment of the automobile market today. EVs are gaining popularity due to factors such as vehicle performance, costs savings (in fuel and maintenance), and environmental values. Rate of uptake has also benefitted from improvements to vehicle and charging technologies, more widely available charging, and the falling price of vehicles. EVs have higher efficiency and lower emissions overall compared to gasoline vehicles, especially in areas with low-carbon electricity sources such as BC[2,3]. From a broader societal perspective, greater adoption of EVs has the potential to significantly reduce air pollution and associated health impacts and costs, as well as greenhouse gases, helping to address climate change and other community energy goals. However, access to charging is an influencing factor for EV uptake by consumers.

1.1 Relationship of EVs to Sustainable Transportation Planning

Burnaby's Environmental Sustainability Strategy (ESS) and related Community Energy and Emissions Plan (CEEP), described below, outline several strategies and a range of suggested actions in support of the Move goal: "A walkable, bikeable and transit-supported city that

[1] This report defines an EV as a personal automobile that can be plugged into the electrical grid (see Section 2.1).
[2] https://www.fueleconomy.gov/feg/atv-ev.shtml
[3] For example see: http://shrinkthatfootprint.com/electric-car-emissions; http://www.ucsusa.org/clean-vehicles/electric-vehicles/life-cycle-ev-emissions

supports a healthy community and environment." Encouraging the use of transit and walking/cycling is an important part of this goal. Similarly, Burnaby's Transportation Plan update, currently in progress, will address themes including accessibility, safety, health, environmental protection, the economy, and community connections.

Within this context, the Electric Vehicle Policy addresses the opportunity to improve the sustainability of personal vehicles, recognizing that this mode is likely to remain a significant component of the transportation system for the foreseeable future. This policy is intended to complement, and not compete with, other transportation policy aimed at improving sustainability and health.

1.2 Electric Vehicle Policy Basis in ESS and CEEP

Burnaby's ESS and CEEP were approved by Council on 2016 November 11. The ESS and CEEP, combined with the pre-existing Economic and Social Sustainability Strategies, are intended to build on Burnaby's successes and set a course toward world-leading sustainability. Policy to support electric vehicles is addressed in a strategy under the "Move" goal in the ESS, and is designated a Big Move (priority strategy) in the CEEP. This strategy and supporting actions are summarized in ***Appendix A***.

The CEEP includes targets for reducing community greenhouse gases (GHGs): a City-Only target of ***5% below 2010 levels by 2041***, and a City-Plus-Others target[4] of *30% below 2010 levels by 2041*.

Fifty percent (50%) of Burnaby's community-wide emissions result from transportation, and of this the large majority is from passenger vehicles (***Figure 1***). The CEEP identified electrification of vehicles as a significant potential opportunity for reducing community GHGs.

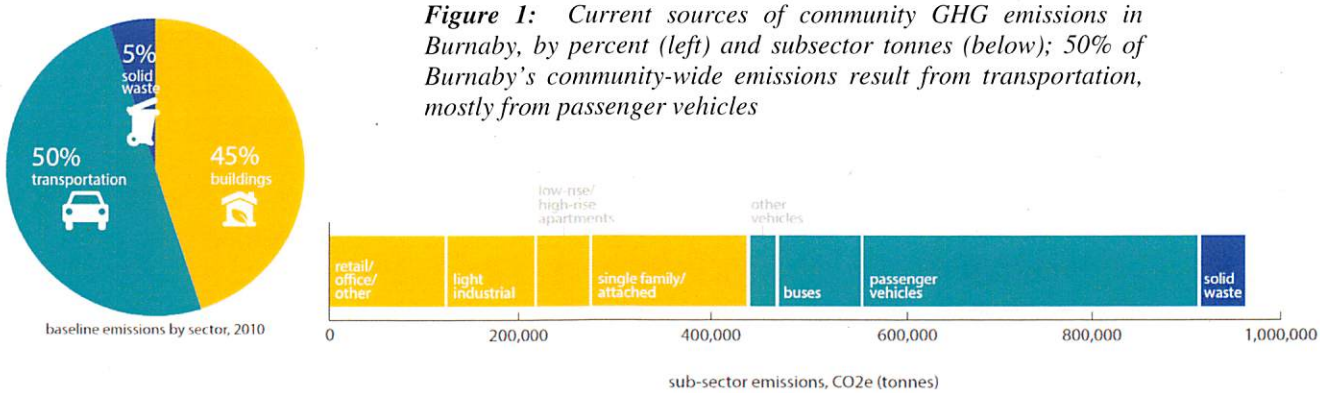


Figure 1: *Current sources of community GHG emissions in Burnaby, by percent (left) and subsector tonnes (below); 50% of Burnaby's community-wide emissions result from transportation, mostly from passenger vehicles*

[4] These dual targets recognize the limits of jurisdiction, and commit the City to the **City-Only** target (5% below 2010 levels) in areas over which it has direct control or significant influence, while also illustrating the potential reduction in GHGs that could be achieved with the support of others (**City Plus Others** target). It should be noted that the **City Only** target entails a substantial (~20%) reduction in GHGs in year 2041 compared to a scenario where no specific action is taken.

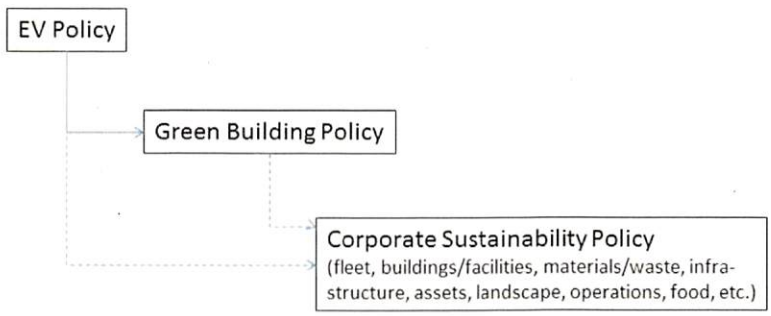
1.3 ESS and CEEP Phase 1 Priorities

Council approved the following three priority policy areas for Phase 1 ESS and CEEP implementation, as outlined in the Sustainable City Advisory Committee Report dated 2017 September 06:

- Green Building Policy
- Electric Vehicles
- Corporate Sustainability

Green Building Policy and EV Policy are proposed to be developed as separate but concurrent initiatives, since buildings are a primary location for EV charging, and for efficiency in stakeholder consultation. Once established, the standards for EV charging in new development will likely be expressed as a component of Green Building Policy. Both EV Policy and Green Building Policy would include direction for City facilities and fleets. These and other opportunities would form part of a Corporate Sustainability Policy, to be initiated at a future date. The relationship between these policies is shown conceptually in ***Figure 2*** below.

Figure 2: *Conceptual relationship between Phase 1 ESS/CEEP policy areas*



This report outlines additional details for development of Electric Vehicle Policy, in ***Section 4***. Further background and details about Green Building Policy will be addressed in a separate report, while Corporate Sustainability Policy details will also be advanced in a separate report, after conclusion of the EV and green building policy development process.

In addition, at its open meeting on 2016 April 12, the Environment Committee of Council received correspondence from EV users encouraging municipalities to support and accelerate the adoption of EVs. Arising from discussion, the Committee requested that staff review the issues related to electric vehicle markets and develop policy to support electric vehicle charging. This report also responds to that request by providing an overview of EV technology, markets and policies at various levels of government and in the City of Burnaby.

2.0 TECHNOLOGY AND MARKET BACKGROUND

2.1 Vehicles and Charging Infrastructure

The following types of vehicles are considered "electric vehicles", based on their requirement to plug into the electrical grid. This definition is standard in the industry, and does not include hybrid vehicles which, although they have an electric component to their engine, are recharged from driving and do not require plugging in.

- **Battery Electric Vehicle (BEV):** A vehicle that is solely powered by an electric powertrain recharged from the electric grid. Also sometimes called "Pure EV" or "100% Electric". ***Examples:*** *Nissan Leaf, Tesla Model S, BMW i3*

- **Plug-in Hybrid Electric Vehicle (PHEV):** A Hybrid Electric Vehicle that can be recharged from the electric grid, typically with the ability to travel significant distances without burning fuel, but with a combustion powertrain that can enable longer distances. ***Examples****: Chevrolet Volt, Ford C-Max Energi*

Examples of vehicle specifications for some of the most popular EVs in BC, and two models recently released and on the verge of release, are shown in ***Table 1***.

Table 1: *Examples of some of the most popular EVs in BC**

	Type of EV	Total # sold in BC up to June 2017	Electric range (km) **	Time to charge (Level 2 AC)	Price (new), CAD approx.
Nissan Leaf	BEV	1520	172	4.5h	$37,000
Tesla Model S	BEV	1315	435	9h	$95,000
Chevy Volt	PHEV	902	85	4.5h	$39,000
BMW i3	BEV/PHEV	406	183	4.5h	$47,000
Kia Soul	BEV	360	149	4.5h	$35,000
Chevy Bolt	BEV	131 – *note, just released in 2017*	383	9h	$43,000
Tesla Model 3	*BEV*	*N/A - ordering for mid-2018 delivery*	*350*	*7h*	*$47,000*

*sources: www.plugndrive.ca, Powertech 2016[5], www.chevrolet.ca, www.tesla.com
**Range is shown for most recent model, which may differ from earlier models included in count in column 3.

Charging technology is also rapidly evolving. In addition to various power levels, there are technologies to deliver, meter and share power among multiple charging facilities, which can help to reduce costs and improve efficiency.

The most commonly used charging facilities are classified as follows, summarized in ***Table 2***.

[5] Powertech Labs Inc. 2016. EV Technology and Market Overview. Background Report, produced for Metro Vancouver, City of Abbotsford and Township of Langley.

- **Level 1 AC** charging is compatible with home outlets, for plug-in with a vehicle's supplied charging cable or dedicated equipment. Due to the long charge times, they are only suitable for long-term parking, and even overnight parking would not fully charge the longer-range BEVs coming on the market. For this reason Level 2 AC is becoming the new standard for most common locations including home charging.

- **Level 2 AC** charging is typically provided in a wide range of residential, commercial, workplace and public locations. One to two hours of charging can provide an effective "top-up", four to five hours can fully charge most BEVs on the market, and seven to nine hours can charge the longest range BEVs available (and pending), as shown in ***Table 2***.

- **DC Fast Charging** is typically provided in strategically located public areas, to provide charging for drivers on the go, for top-up and to support longer distance driving. DC fast charging can provide an 80% charge to most BEVs in approximately 30 minutes.

- **Tesla Super Chargers** are proprietary systems designed to service Tesla vehicles only, and to deliver even more rapid charging than DC Fast Charge, at around 273 km per half hour. Tesla vehicles can also use most other charging facilities with an adaptor.

Table 2: *Summary of EV charging types* (note: charging times are approximate and likely to change with future evolution of technology)*

Type of Charging	Power level(s)	Est. km of range per time charging	Most common locations
Level 1 AC	120v, 15A	≤ 7 km per h	Home and long-term parking
Level 2 AC	240v 3.3-3.6kW, 16A **240v 6.6-7.2kW, 40A**	15-45 km per h	Home, workplace, commercial, public facilities
DC Fast Charge	25kW **50kW**	90-150 km per h	Public facilities, stand-alone
Tesla Super Charger (DC)	135kW	273 km per half hour	Stand-alone

*sources: Powertech 2016, www.tesla.com, www.pluginbc.ca

Detailed information on costs of charging infrastructure is beyond the scope of this report, as it can vary widely depending on the type of system, number of chargers, whether or not electrical upgrades are required, and systems to distribute electrical loads (load-sharing). Generally, Level 2 AC charging can cost less than $1000 per "energized" parking stall if the necessary electrical infrastructure is installed at time of construction as part of a load-sharing system; the EV owner would then add the charging equipment itself at the time of vehicle purchase, at an additional cost. Level 2 retrofit costs may range from approximately $5,000 to $10,000 (or more) as a single retrofit installation, depending on electrical system capacity. DC Fast Charge stations cost between $50,000-$100,000 to install.

2.2 EV Market Trends

2.2.1 Current Market Share and Trends

Overall, EV markets today are relatively small compared to the total vehicles sold. However, growth over the past five years has been rapid and appears to be accelerating.

Global

Worldwide, EV sales are still less than 1% of all light duty vehicles. In 2016, 1.26 million EVs were sold worldwide, almost 50% more than 2015; whereas in 2005 sales were still in the hundreds.[6] The United States and China account for the most vehicles. Bloomberg New Energy Finance forecasted that worldwide EV penetration would reach 35% by 2040, and this year that prediction was increased to 54% by 2040[7,8]. Other studies predict even faster uptake, particularly in combination with autonomous vehicles[9].

Canada

In Canada, EVs represented 0.8% of the new vehicles sold in 2016. This percentage has grown rapidly, from just 0.03% in 2011[10]. 95% of Canada's EV sales occurred in BC, Ontario and Quebec.

British Columbia and Lower Mainland

In 2016, EVs accounted for 1% of new vehicle sales in BC (approx. 2135 out of 221,600 total vehicles), up 38% from the previous year. In the first half of 2017 EV sales in BC have increased to 1.2% (approx. 1500 out of 120,300 total vehicles).[11]

Metro Vancouver and City of Burnaby

According to ICBC in June 2016 there were 2,925 EVs registered in Metro Vancouver and 222 EVs registered in Burnaby (out of 1,368,900 and 126,702 total vehicles, respectively). In comparison, in 2012 there were only 12 EVs registered in Burnaby (out of 112,668 total vehicles).

2.2.2 Forecasts

There are several reasons for the recent surge in EV sales and use that will likely continue to influence trends in the near future:

- Improved and lower-cost battery technology;
- Increased range of newer EVs;

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[6] International Energy Agency, Global EV Outlook 2016.
[7] Bloomberg New Energy Finance, "Electric vehicles to be 35% of global new car sales by 2040"
[8] BNEF VIP Comment July 1, 2017, "EV Bandwagon Is Accelerating, But Is It Unstoppable?"
[9] Rethinking Transportation 2020-2030, The Disruption of Transportation and the Collapse of the Internal-Combustion Vehicle and Oil Industries. James Arbib and Tony Seba. May 2017.
[10] Matthew Klippenstein for Green Car Reports.
[11] Sources: www.tinyurl.com/CanadaEVSales ; http://www.fleetcarma.com/ev-sales-canada-2016-final/; https://www.fleetcarma.com/electric-vehicle-sales-canada-q2-2017/

- Increasing variety of types and models of EVs including plug-in hybrids and SUVs, with 40 models now available in Canada;
- Expansion of charging infrastructure; and
- Incentives/rebates.

Forecasting market uptake of EVs is complex due to many factors and uncertainties. An SFU study[12] estimated low and high scenarios of EV market penetration of 24-27% in the Lower Mainland by 2030. A study commissioned by Metro Vancouver[5] estimated that the SFU "high" scenario was more likely, based on new developments in the market since that report. BC Hydro has included EV market estimates in their resource plans, most recently updated in 2013. BC Hydro modeled a reference of 5% EV market share by 2020 and 20% by 2028 as well as a "high" case of just under 10% by 2020 and just over 50% by 2028[13].

Policy has a strong influence on the potential rates of EV uptake. As shown in ***Figure 3***, the highest levels are associated with both demand-side policy (e.g. federal support for research and development) and demand-side policy (e.g. provincial subsidies), together with provision of access to charging.

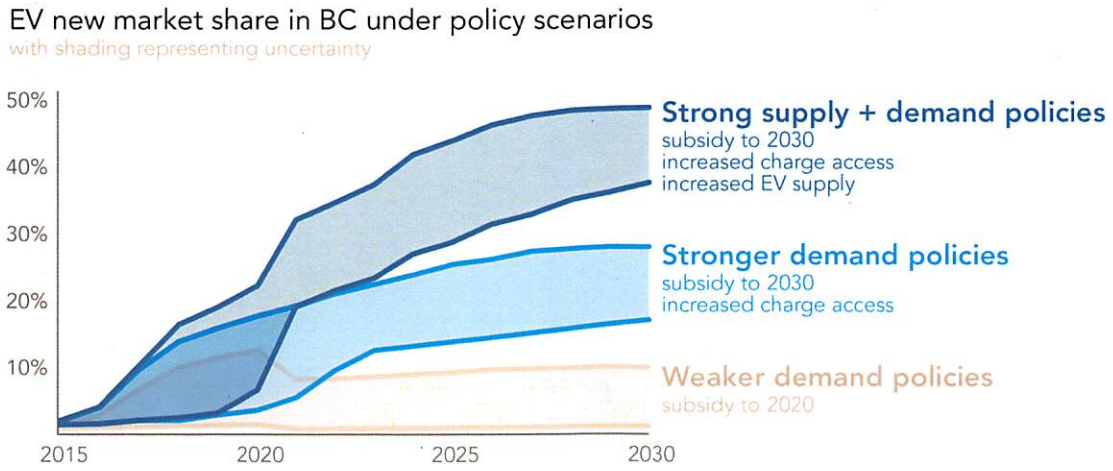

Figure 3: *EV new market share in BC under different policy scenarios*[14]

Should automakers follow through on recent statements that they are moving towards all-electric fleets, the barrier of model availability will be removed. The key remaining barrier will be charge access, which local government can influence and assist.

[12] Axsen, J and others (2015). Electrifying Vehicles: Insights from the Canadian Plug-in Electric Vehicle Study. Simon Fraser University, Vancouver, Canada. Web link.
[13] BC Hydro, Integrated Resource Plan, 2013, Appendix 2A, Appendix 4, Electric Vehicles. Web link.
[14] Adapted from Wolinetz, M. and Axsen, J. (2016). How policy can build the plug-in electric vehicle market: Insights from the REspondent-based Preference And Constraints (REPAC) model. Technological Forecasting and Social Change. Web link.

2.3 Greenhouse Gas Reduction Potential of EVs

The transition from fossil fuel to electric fuel for passenger vehicles is one of the actions with highest potential to reduce overall greenhouse gas emissions within communities. The amount of greenhouse gas reduction depends on the GHG intensity of the electricity grid, the total numbers of conventional vehicles displaced by electric vehicles, and the type of EV (full battery electric or plug-in hybrid). Due to BC's predominantly hydro-electric grid and relatively high rates of EV adoption, the greenhouse gas reduction potential in BC is estimated to range from 79% to 98% per vehicle.[15]

In terms of life-cycle emissions, GHG reductions have been modelled to range from 55% to 80% for PHEVs and BEVs respectively, when calculated over the life-cycle of the vehicle (manufacture, fuel production and tailpipe emissions) for vehicles driven in BC.[16]

In addition to GHGs, other tailpipe emissions would decline with greater uptake of EVs, including carbon monoxide, nitrogen oxides and volatile organic compounds. Some of these emissions also contribute to global warming, while others impact human health.

EV Policy is a good example of an action for GHG reduction that can be taken by both the City and "others," reflecting how Burnaby's CEEP was structured. The roles of various levels of government are further described in ***Section 3***.

2.4 Barriers to EV Uptake

Aside from limitations in familiarity with EVs as relatively new technology, the main barriers to uptake are related to vehicle range and ability to recharge to complete longer trips. "Range anxiety" is gradually fading as longer-range vehicles (PHEVs and BEVs) are coming on the market. However, broad access to charging remains a constraint.

In the SFU study noted above[12], various user groups were surveyed to determine their interest in EVs. Among non-EV owners about one-third expressed interest in buying some type of EV. Availability of home charging was seen as a strong factor in determining interest in buying an EV among this group, whereas access to public charging was less of a factor. Other factors limiting uptake included availability of EVs, choice of EV makes and models, and finally, familiarity with EV technology. Overall, the study highlighted the need for policy to support EV charging.

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[15] The lower reduction number occurs when a mix of BEV and PHEV adoption is assumed, with home charging access and some public charging. The highest reduction (98%) occurs when the vehicles are battery-electric only, made possible by an extensive charging network (home, work and public network).

[16] Studies have found that emissions from vehicle disposal are equivalent across EV and conventional vehicles, with the exception of the batteries; however, battery re-use and recycling is possible and will offset some of the emissions associated with manufacturing the batteries.

2.5 Autonomous Vehicles

Autonomous vehicles (AVs), also known as "self-driving cars," represent another rapidly developing component of the future EV market. The scenario of future electric AVs combined with ride-sharing or shared ownership has been called a "disruptive technology" that may substantially transform the entire transportation industry and related markets[17]. Although the timing and nature of future AV deployment remains highly uncertain at this time and is beyond the scope of this report, it is noted here since it relates to the need for EV charging generally, along with cellular servicing which is also required by most networked EV charging systems.

3.0 EV POLICY BACKGROUND

EVs are a technology that can provide potential benefits for society (reduced pollution and improved health), but as a new technology, faces constraints. Many of these constraints align with the purview of the various levels of government. Government policy at the federal and provincial level may address the supply of EVs, such as funding for technology research and development, or the demand, such as with financial incentives. Local government policies and programs typically focus most strongly on the provision of charging infrastructure, related to the regulation of land use and development and in support of adopted community energy and emissions plans.

3.1 Federal Government

In 2016, the federal government announced funding for EV charging, and subsequently Natural Resources Canada funded the installation of 30 DC Fast Charge stations in communities along highways. The 2017 budget commits $21.9 billion over 11 years in green infrastructure, including funding for a national electric and alternative fuel network, and adds to 2016 commitments to fund EV charging by an additional $120 million. The federal government recently (May 2017) announced they are working with provincial/territorial partners, industry and stakeholders to develop a Canada-wide Zero Emissions Vehicle Strategy by 2018.

3.2 Provincial Government

The Provincial Climate Leadership Plan sets direction to expand the Clean Energy Vehicle Program and to provide incentives for EV charging. The Province is involved in a range of programs supporting EVs:

- The BC Clean Energy Vehicle Program provides vehicle point-of-sale incentives for EVs, applicable to B.C. residents, businesses, non-profit organizations and local government organizations.

- The Charging Infrastructure Program entails two programs administered by Fraser Basin Council:

[17] Arbib and Seda, 2017. Rethinking Transportation 2020-2030, The Disruption of Transportation and the Collapse of the Internal Combustion Vehicle and Oil Industries.

- The Multi-unit Residential Building (MURB) Charging Program, offering grants for installing EV charging in existing buildings; and

- The Fleet Champions Program, offering an evaluation of fleets for business, non-profit and public organizations, for opportunities and business case to incorporate EVs, and incentives for installing charging.

- Emotive is a provincial program administered by the Fraser Basin Council and Metro Vancouver for public outreach to raise awareness about EVs (www.emotivebc.ca).

- Plug-in BC is a program co-chaired by the Province and BC Hydro, hosted by the Fraser Basin Council and supported by academic institutions, regional governments, EV user groups, businesses and individuals, that undertakes research, and provides information, training, outreach and guides/tools (http://pluginbc.ca).

Other Provincial policies/programs include the Scrap-It Program which offers incentives to "scrap" older vehicles and purchase low-emissions vehicles including EVs, and the High Occupancy Vehicle (HOV) lane policy which allows EVs displaying a decal to use the HOV lane regardless of the number of passengers.

3.3 Regional EV Policy in Metro Vancouver

Metro Vancouver plays a role of coordination, research and information sharing among municipalities to support EVs, and undertakes public outreach under the provincial Emotive program described above. As noted below Metro Vancouver also provides public charging at its headquarters in Burnaby.

3.4 Municipal EV Policy in Metro Vancouver

Four other municipalities in Metro Vancouver currently have formal policy requiring certain levels of charging in new development: City of Vancouver, City of Richmond, District of North Vancouver and City of North Vancouver. Of these, two (Richmond and Vancouver) are in the process of updating their policies to require higher levels of charging. In addition, at least three municipalities (Surrey, Delta, Port Coquitlam), are in the process of developing policy. Burnaby's policy and practice as summarized below is proposed to be updated through the process outlined in this report.

Generally, local government policy addresses the provision of charging in new developments and the provision of charging at public facilities for staff and public. Retrofitting existing development for EV charging is the responsibility of individual property owners/stratas, although local governments may provide information about funding programs to property owners.

3.5 BC Hydro

BC Hydro has partnered with the federal and provincial government to install DC Fast Charge stations and is exploring opportunities to expand the network. They also support research in EV technology and policy, and provide services and information for installing EV charging. BC Hydro is actively engaged in planning for the expansion of EV charging and considers uptake scenarios in province-wide electrical supply planning.

3.6 EV Users

The Vancouver Electric Vehicle Association is a non-profit organization that undertakes education and advocacy on behalf of EV drivers. Their members attended the recent 2017 Environment Day at Burnaby City Hall, and provided a display of a range of EVs and opportunities for the public to ask questions of EV drivers.

3.7 Existing Burnaby Policy and EV Charging Network

As noted in ***Section 1.1***, Burnaby's Environmental Sustainability Strategy (ESS) and related Community Energy and Emissions Plan (CEEP) include a strategy and supporting actions under the Move goal for supporting deployment of electric vehicles (see also ***Appendix A***).

Among the individual areas for action modeled as part of development of the CEEP, electrification of the vehicle network was noted to have one of the largest potential benefits for reducing the community's greenhouse gas emissions.

3.7.1 Existing Burnaby EV Policy and Practice

The City of Burnaby's current requirements for EV charging in new large residential developments is linked with the supplemental density policy which specifies transportation demand management measures that can be included in RM3s, RM4s and RM5s sites pursuing the supplemental bonus density provisions, in exchange for reduced parking requirements. Generally, a target of 10% of parking stalls supplied with charging is sought through CD rezoning applications. Some developers have chosen to exceed this target for market reasons. For example, the Concord Brentwood development has committed to providing 100% of parking stalls with fully serviced EV charging.

City records indicate that, in 41 rezonings subject to provisions for increased density through the supplemental density policy (RMs zoning) since 2012[18], about 1600 parking spaces have been provided with some level of EV charging, and an additional 100 spaces pre-wired for future EV charging. This represents about 8% of total parking spaces. Of these 1700 spaces, 51% are or will be Level 2, 23% Level 1, and 26% do not specify a level of charging. Shared electric vehicles have also been secured through the rezoning process.

[18] This includes individual development rezoning applications under the RMs category that have advanced to at least Public Hearing stage, and do not include Master Plan rezonings.

This has been a successful program given current EV use.

3.7.2 Public EV Charging in Burnaby

City-owned public EV charging is provided at Edmonds Recreation Centre (one Level 1 charging stall[19]) and Deer Lake 1 building (two Level 2 charging stalls). EV charging opportunities can be considered in the design of future facilities and retrofitting of existing facilities, as supported by the future EV Policy.

Other jurisdictions operating within the city can also play an important role in the local EV charging network, serving both staff, visitors and the public. These include:

- *Institutions* such as BCIT, SFU, Burnaby General Hospital and some schools. BCIT operates a public DC Fast Charge station at its Burnaby campus that is part of the Energy OASIS project, integrated with a solar panel array as the primary energy source[20].

- *Businesses:* There are currently approximately 35 publicly accessible Level 2 charging stations operated privately within the City of Burnaby; mapped locations and specific details about these stations can be viewed on the www.plugshare.com website. Metro Vancouver is currently undertaking research and outreach with local businesses to gauge opportunities for encouraging installation of EV charging in the workplace.

- *Metro Vancouver:* Level 2 charging is available in the current headquarters building on Kingsway, and there are plans to install a publicly accessible DC Fast Charge station in the Metrotower III building (new headquarters location) in 2018.

4.0 APPROACH FOR DEVELOPING EV POLICY

EV Policy is one of three Phase 1 policy areas being advanced in support of Burnaby's approved ESS and CEEP, as outlined in the Committee report dated 2017 September 06 and approved by Council for further development. As outlined in the preceding sections in this report, the EV market share, although still relatively small, is forecast to grow quite rapidly.

Development of EV policy is proposed to entail the following scope, key tasks and timeline, as a basis for advancement of specific policy for Council consideration. As previously noted, EV policy will also form part of broader green building policy, proposed to be developed concurrently; further background for green building policy, including addressing the provincial Energy Step Code, will be advanced for Council's consideration in a separate report.

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[19] Comments from the public have confirmed that Level 1 is not sufficient for most visitors to this facility due to the long time required, thus Level 2 would now be the likely type of charging installed in new facilities.

[20] http://www.bcit.ca/microgrid/energyoasis/

4.1 Scope and Key Components of Policy

Since most EV charging happens at home and at the workplace, and the cost of retrofitting can be prohibitive, inclusion of EV charging in new developments would be a focus for the Electric Vehicle Policy, as a part of broader green building policy, to be developed concurrently. Policy direction for public charging at City facilities (existing and new), and consideration of EVs in City fleets, will also be considered at a high level.

4.1.1 Provision of private and public charging within New Private Development

The Electric Vehicle Policy is proposed to address the relevant Big Move strategies from the ESS and the CEEP listed in ***Appendix A***. This would include developing standards or guidelines for the types, number and minimum performance requirements of charging infrastructure in or alongside larger/complex buildings such as mixed use, commercial, and mid-rise and high-rise multi-family residential buildings (Part 3 in the BC Building Code), and single, two-family and ground-oriented residences (Part 9 in the BC Building Code). Consideration will be given to both private and public (e.g. guest parking) standards.

The Electric Vehicle Policy will also look at a range of implementation considerations, based on the best available information, including: expected benefits and costs to building occupants/owners, developers and the City; industry readiness; administration and legal structure (i.e. within a Bylaw and/or as formal policy); opportunities for incentives; and compliance and enforcement. The policy will also consider providing anticipated timelines for future updates.

As Electric Vehicle Policy would apply only to personal vehicles, broader transportation planning for other modes (walking, cycling, transit and goods movement), and planning of road networks, will be addressed through Burnaby's Transportation Plan (currently being updated), and supported by the Move goal in the ESS and CEEP.

4.1.2 City Facilities and Fleets

Publicly accessible charging provides a valued service to customers that can supplement home and workplace charging. Like in new residential and commercial buildings, the costs of retrofitting City facilities can be prohibitive, thus including EV charging in new facilities can be a fiscally-responsible investment that is also future-oriented. This can include a combination of providing charging to serve near-term demand, and provision for future expansion (e.g. by sizing of electrical supply and installing conduit). The policy would consider the general direction for EV charging at City facilities (new and existing), and consider options for equitable fee-for-use, which are also being investigated by other jurisdictions in the region.

The policy would also aim to provide direction for consideration of EVs in City fleets, at a high level, in support of a future detailed analysis.

Should specific time-sensitive opportunities arise for EV charging at City facilities or fleets prior to finalization of the Electric Vehicle Policy, staff may advance such initiatives for Council's consideration on a case-specific basis.

4.2 Scope and Process for Policy Development

The following process and scope is proposed in support of development of EV Policy. The process would include collaboration with other local governments and jurisdictions that are actively involved in EV policy development including research and analysis. It is anticipated that the following program would be undertaken between November 2017 and September 2018. Some preliminary/background work has already been initiated.

1. ***Review of existing policy approaches, best practices*** *(Nov. – Dec. 2017)*

   This will include review of policy approaches in other jurisdictions, review of available research for Burnaby-specific data and implications, and information sharing among staff in other local governments. During this phase Burnaby City staff will also be engaged to raise awareness and understanding of EV related technologies and issues, and identify issues specific to Burnaby.

2. ***Development of policy options and stakeholder consultation*** *(Dec. 2017 – Mar. 2018)*

   Stakeholders would be engaged, including developers (e.g. Urban Development Institute), EV users (e.g. Vancouver Electric Vehicle Association), businesses (e.g. Burnaby Board of Trade), industry (EV charging providers) and representatives of building owners/stratas, to discuss opportunities, concerns and considerations related to provision of EV charging in new development. This work is proposed to be coordinated with concurrent consultation on broader Green Building Policy where possible.

   Public EV charging at City facilities would support and complement charging on private sites, and incorporation of EVs in the City's vehicle fleets can support corporate emissions reduction and may present opportunities to reduce operational costs. General guidelines or criteria for consideration of EV charging opportunities in new and existing City facilities would be drafted in this phase.

3. ***Public Consultation*** *(May – July 2018)*

   The proposed policy, expressed as a component of Green Building Policy, would be shared with Council and subsequently provided to the public and stakeholders for comment, via printed, online and in-person formats. A summary of results from public consultation would be reported to Council along with the proposed policy framework.

4. ***Council Approval of Policy*** *(Sept. 2018)*

   In responding to the feedback from public and stakeholders a proposed policy would then be advanced for Council's consideration.

4.3 Resources and Budget

Existing City staff will lead and support this work, supplemented with additional external resources as appropriate. Budget has been allocated from existing operational budgets. As the work progresses, should a need arise to seek additional resources to address particular needs or data gaps, a request to that effect will be advanced for Council's consideration.

There are also some external resources and partnerships that City staff can draw upon to support this work. This includes the work of agencies such as Metro Vancouver, the Province, BC Hydro, and SFU, which includes facilitation of dialogue among local governments, hosting education events and resources, and undertaking research and analysis.

5.0 CONCLUSION

Electric vehicles represent a significant opportunity to achieve community health and sustainability goals including reducing greenhouse gas (GHG) emissions and improving air quality. The market is rapidly evolving, but faces current constraints including a lack of sufficient charging infrastructure. It is recognized that the technology and solutions in this field is also subject to rapid change. As such, specific policies will need to be responsive to this environment to ensure any City efforts are sound, efficient and appropriate over time.

Policy is in place and being developed at the federal, provincial and local government levels to support EV uptake. In Burnaby, the recently adopted ESS and CEEP frameworks support development of City policy to support EVs as a priority area for action. On this basis, it is recommended that the Committee recommend that Council authorize staff to undertake development of an EV Policy, together with development of broader green building policy, as outlined in Section 4 of this report.

Lou Pelletier, Director
PLANNING AND BUILDING

LT:sla
Attachment

cc: City Manager
Director Engineering
Director Finance
Director Parks, Recreation and Cultural Services
Chief Building Inspector
City Clerk

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APPENDIX A

ELECTRIC VEHICLE POLICY DIRECTION AS STATED IN ESS AND CEEP

The following text is excerpted from the approved Environmental Sustainability Strategy and Community Energy and Emissions Plan.

Table A1. *Electric Vehicle Policy - Strategy and Suggested Actions in ESS and CEEP*

	ESS	CEEP
"Move" goal	A walkable, bike-able and transit-supported city that supports a healthy community and environment.	
Strategy No.	5.6.	C2.5 – **Big Move**
Strategy	Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.	
Suggested Actions	a) Consider developing policy to strategically support and encourage the use of electric vehicles, including charging infrastructure in new developments and publicly accessible areas.	a) Consider developing policy to strategically support deployment of electric vehicles, including appropriate types and density of charging infrastructure in new development and publicly accessible areas, and consideration for public fast-charge station(s).
	b) Support and encourage car-sharing and bike-sharing.	c) Encourage and develop partnerships to expand car-sharing and consider bike-sharing opportunities in new development.
	c) Consider developing a parking policy to encourage fewer automobile trips, and prioritize more efficient and low-emissions vehicles like priority parking for carpool/vanpool, electric vehicles, and car-share vehicles.	b) Consider opportunities for demonstrating leadership by accelerating EV adoption by including EVs in corporate fleets, and providing public charging in municipal buildings and parking lots.
Quick Start	*13. Undertake a preliminary review and policy recommendations to support deployment of electric vehicles.*	