

City of Maple Ridge

**COUNCIL WORKSHOP AGENDA**  
**March 12, 2019**  
**2:00 PM**  
**Blaney Room, 1<sup>st</sup> Floor, City Hall**

*The purpose of the Council Workshop is to review and discuss policies and other items of interest to Council. Although resolutions may be passed at this meeting, the intent is to make a consensus decision to send an item to Council for debate and vote or refer the item back to staff for more information or clarification. The meeting is live streamed and recorded by the City of Maple Ridge.*

**REMINDERS**

**DATE**

Council Meeting

7:00 p.m.

1. **APPROVAL OF THE AGENDA**
2. **ADOPTION OF MINUTES**
  - 2.1 Minutes of the February 26, 2019 Council Workshop Meeting
3. **PRESENTATIONS AT THE REQUEST OF COUNCIL**
4. **UNFINISHED AND NEW BUSINESS**
  - 4.1 **Overview of Proposed Integrated Court - Presentation**
    - Lori Ashton, Crown Counsel
    - Inspector Aaron Paradis - Operations Officer Ridge Meadows Det.
    - S/Sgt. Kevin O'Donnell - Plainclothes Commander Ridge Meadows Det.
    - Cpl. Amanda Harnett - A/NCO i/c the Uniform Community Response Unit
  - 4.2 **Electric Vehicle Charging Infrastructure: Council Update and Next Steps**

Staff report dated March 12, 2019 recommending that staff be directed to prepare amendments to the Off-Street Parking and Loading Bylaw to integrate the requirements identified in the report titled "Electric Vehicle Charging Infrastructure: Council Update and Next Steps" dated March 12, 2019 and that once prepared the amending Bylaw be placed on an available Committee of the Whole Agenda.

4.3 Social Housing Plan – Presentation

- Christine Carter, Director of Planning
- Brent Elliott, Manager of Community Planning

5. *CORRESPONDENCE*


5.1 Upcoming Events

Thursday, March 14 6:00 – 9:00 pm	Innovation in Emerging Cities: Community Leaders Forum The ACT Arts Centre
Friday, March 15 6:00 – 10:00 pm	Ridge Meadows Hospice Society – St. Paddy’s Day Pub Night Samz Pub, Pitt Meadows
Wednesday, March 13 1:30 – 3:30 pm	Maple Ridge Park Clean Up, hosted by Adopt-a-Block 23200 Fern Crescent, Maple Ridge
Thursday, March 14 11:00 am – 4:00 pm	Black Press Extreme Education and Career Fair Greg Moore Youth Centre
Saturday, March 16 9:00 am – 1:00 pm	Garage Sale – Maple Ridge Lawn Bowling Club Maple Ridge Lawn Bowling Club (11445 232 Street)

6. *BRIEFING ON OTHER ITEMS OF INTEREST/QUESTIONS FROM COUNCIL*

7. *MATTERS DEEMED EXPEDIENT*

8. *ADJOURNMENT*

Checked by:   
Date: Mar 8/19

2.0 Minutes

**2.0**

City of Maple Ridge

**COUNCIL WORKSHOP MINUTES**

February 26, 2019

The Minutes of the City Council Workshop held on February 26, 2019 at 1:30 p.m. in the Blaney Room of City Hall, 11995 Haney Place, Maple Ridge, British Columbia for the purpose of transacting regular City business.

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**PRESENT**

*Elected Officials*

Mayor M. Morden  
Councillor J. Dueck  
Councillor Duncan  
Councillor C. Meadus  
Councillor G. Robson  
Councillor R. Svendsen  
Councillor A. Yousef

*Appointed Staff*

P. Gill, Chief Administrative Officer  
Christine Carter, Acting General Manager Public Works and  
Development Services / Director of Planning  
K. Swift, General Manager of Parks, Recreation and  
Community Engagement  
L. Benson, Director of Corporate Administration  
T. Thompson, Chief Financial Officer

*Other Staff as Required*

D. Pollock, Municipal Engineer  
P. Irani, Manager of Transportation  
B. Elliott, Manager of Community Planning  
A. Bowden, Planner 1, Community Planning

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Note: These Minutes are posted on the City Web Site at [www.mapleridge.ca](http://www.mapleridge.ca)

1. **APPROVAL OF THE AGENDA**

R/2019-069

It was moved and seconded

That the agenda of the February 26, 2019 Council Workshop Meeting agenda be to deal with Item 4.1 first to give the presenters of 3.1 time to enter the meeting ; and

That the agenda as amended be approved.

CARRIED

2. ***ADOPTION OF MINUTES***

2.1 Minutes of the February 5, 2019 and February 12, 2019 Council Workshop Meetings

R/2019-070

It was moved and seconded

That the minutes of the February 5, 2019 Council Workshop be adopted

That the minutes of the February 12, 2019 Council Workshop be amended as follows:

That R/2019-071 wording of “request for a letter of support be forwarded to the February 26, 2019 Regular Council Meeting for consideration.” be replaced with “be provided with a letter of support as requested.”; and,

That the minutes of the February 12, 2019 Council Workshop as amended be adopted.

CARRIED

4. ***UNFINISHED AND NEW BUSINESS***

4.1 Lougheed Corridor Phase 1 Summary

Staff report dated February 26, 2019 providing information on Lougheed Corridor Phase 1.

Amelia Bowden, Planner 1 gave a PowerPoint Presentation including the following information:

- Background
- Project Timeline
- Metro Vancouver Study Results – Maple Ridge Data
- Study Area Boundaries
- Local Developer Feedback
- Housing Profile
- Anticipated Residential Demand
- Anticipated Commercial Demand
- Communications and Consultation Strategy
- Direct Mail campaign
- Video Presentation on public consultation
- In-Person Communication
- Newspaper and Online Communication

### 3. *PRESENTATIONS AT THE REQUEST OF COUNCIL*

#### 3.1 Staff Introduction by Brent Elliott, Manager of Community Planning

B. Elliott, Manager of Community Planning provided an introduction to explain how the following three agenda items relate to one another. He gave a PowerPoint presentation including the following information:

- Maple Ridge Lougheed Transit Corridor Study Timeline
- Phase 1 – Project Scoping Report
- Combining the Studies Together

#### TransLink – Area Transport Plan Update

- Sarah Ross, Director of Systems Planning; Matt Craig, Manager of Systems Planning & Brian Soland, Senior Planner

Sarah Ross gave a PowerPoint presentation including the following information:

- Mayors' 10-Year Vision – Phase One and Two Improvements
- Update on Lougheed B-Line Implementation (End of 2019)
- Upcoming consultation with Maple Ridge-Pitt Meadows Area Transport Plan
- Lougheed Corridor Long-term Transit Study (ongoing) and connection to the Regional Transportation Plan
- Future Rapid Transit and B-Line Network
- What is the Proposed 'B-Line or Better' Service
- Public Support for B-Line noting 81% support or strongly support
- Transit priority will make B-Line more competitive with driving
- Implementation Considerations including costs covered by TransLink and Mayors' Vision Phase Two Investment Plan including cost sharing program for further improvements and TransLink working with municipal staff
- Timeline to 2019 B-Line Launch
- Maple Ridge-Pitt Meadows Area Transport Plan
- Phase 1 Consultation: Identifying Issues and Opportunities
- Phase 2: What we heard and Develop Strategies and Actions
- 5 Transit Strategies
- Example of Potential Changes: Routes 745 and 746
- Walking and Cycling – TransLink supports local projects through cost-sharing programs with municipalities
- Integration with Local Transportation Plans
- Walking to Transit Strategies
- Cycling Strategies
- New Mobility and Emerging Technology
- Evaluation Framework for Potential Strategies and Actions
- Phase 2 Consultation Methods and Dates; Consultation Promotion and Events
- Lougheed Corridor Long-Term Transit Study including draft values and goals identified with Municipal Working Group, and evaluation framework

- Next steps including Area Transport Plan, B-Line Implementation and Lougheed Corridor Long-Term Transit Study

Council asked questions regarding: West Coast Express potential for Lougheed at 240 St., park and ride service for downtown Maple Ridge, light rail potential for Maple Ridge, Major Road Network funding for 240 St. to Silver Valley, B-Line priority travel lanes, accessibility considerations,

### 3.2 Metro Vancouver- Lougheed Corridor Land Use Plan

- Erin Rennie, Senior Planner
- James Stiver, Manager, Growth Management and Transportation

Erin Stiver gave a PowerPoint presentation including the following information:

- Lougheed Corridor Land Use and Monitoring Study – Report on Study Process and Findings
- Urban Centres and Frequent Transit Development Areas (FTDAs): Critical tools for shaping growth
- Metro 2040 targets
- Urban Centre and FTDA Policy Review and Corridor Studies
- Rider Benefits Lougheed B-Line will bring
- Lougheed Corridor Land Use and Monitoring Study
- Study Purpose
- Partnering across boundaries and agencies
- Study Process
- Custom Study Area Geography
- Monitoring Program to track land use and transportation indicators over time
- Market Potential Assessment
- Transit-Supportive Corridor Opportunities
- 6 Ds of Transit-Oriented Communities being destination, distance, design, density, diversity and demand
- Key Findings for Lougheed Corridor
- Next steps including B-Line Implementation and Area Transportation Plan, Lougheed Corridor Long-Term Transit Study, Metro 2040 Urban Centre and FTDS Review, Corridor Study analysis may inform further municipal work, baseline monitoring report-2019, and Metro Vancouver facilitation and discussion services

### 3.3 2019 Property Assessment Review

Staff report dated February 26, 2019 providing information on the 2019 Property Assessment.

CK Lee, Manager of Revenue and Collections gave a PowerPoint presentation including the following information:

- Background

- Residential and Commercial comparison between 2018 and 2019
- Residential, growth and market stats
- Growth by Area and Property Type
- Map
- Market Change by Area and Property Type with map for visual reference
- Commercial, growth and market stats
- Growth by Area with map for visual reference
- Market Change by Area with map for visual reference
- Tax Impact on Residential Property (Class 1)
- Distribution of Assessment Change (Class 1)

T. Thompson, Chief Financial Officer, summarized by explaining that the majority of Maple Ridge residences increased in value near the City average and therefore will experience a property tax increase near the 3.5% approved by Council last July.

He also explained that the City's commercial tax rate multiple had decreased, and how this had been driven by the higher market increases experienced in the business and light industrial categories relative to residential market increases.

Council asked questions on commercial tax rate multiple, agricultural land rates, trends in tax deferrals.

#### 4. *CORRESPONDENCE*

##### 5.1 Upcoming Events

February 27, 2019 7:00 – 9:00 p.m.	Pitt Meadows Airport - New Development Information Sessions Sky Helicopters: Unit #170 – 18799 Airport Way, Pitt Meadows
February 28, 2019 10:00 – 11:00 a.m.	Affordable Housing 101 – Webinar for Local Government Elected Officials Registration: <a href="https://bcnpha.ca/courses/affordable-housing-101-for-elected-officials-webinar/">https://bcnpha.ca/courses/affordable-housing-101-for-elected-officials-webinar/</a>
February 28, 2019 11:30 a.m.	BC High School Provincials Curling Championship Golden Ears Curling Club
March 3, 2019 2 p.m. to March 5 10:00 p.m.	2019 BC Economic Summit The Westin Wall Centre, 3099 Corvette Way, Richmond BC

#### 6. *BRIEFING ON OTHER ITEMS OF INTEREST/QUESTIONS FROM COUNCIL*

#### 7. *MATTERS DEEMED EXPEDIENT*



8. *ADJOURNMENT* – 1:55 p.m.

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M. Morden, Mayor

Certified Correct

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L. Benson, Corporate Officer

## City of Maple Ridge

**TO:** His Worship Mayor Michael Morden  
and Members of Council  
**FROM:** Chief Administrative Officer  
**SUBJECT:** **Electric Vehicle Charging Infrastructure: Council Update and Next Steps**

**MEETING DATE:** March 12, 2019  
**FILE NO:** 2018-321-RZ  
**MEETING:** Council Workshop

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### EXECUTIVE SUMMARY:

Council has previously directed the research and review of electric vehicle charging station requirements for new development in the City. The intent of the work was to look at options to integrate electric vehicle charging stations into City development regulations.

Following Council's direction and based on best practices implemented in the Region, staff prepared a draft set of regulatory amendments. Staff further reached out to development industry representatives to discuss the proposed set of regulatory requirements. While some issues and questions were named, the development community and interested stakeholders generally expressed broad levels of support for the proposed electric vehicle requirements for new development.

A summary of the consultation process and outcomes was presented to Council at the December 11, 2018 Workshop meeting, where Council directed that staff continue to work on and report back to Council on the proposed electric vehicle charging infrastructure requirements for new development. Council specifically expressed a preference to regulate 'rough-in' options in any new requirements and sought further information on possible costs.

This report provides an update to Council and recommends that staff be directed to amend the Off-Street Parking and Loading Bylaw to integrate the revised set of electric vehicle charging infrastructure requirements.

### RECOMMENDATION:

**That staff be directed to prepare amendments to the Off-Street Parking and Loading Bylaw to integrate the requirements identified in the report titled "Electric Vehicle Charging Infrastructure: Council Update and Next Steps" dated March 12, 2019, and that once prepared the Amending Bylaw be placed on an available Committee of the Whole agenda.**

### BACKGROUND:

Council has previously directed the research and review of electric vehicle charging station requirements. Subsequently staff conducted research on best practices related to electric vehicle (EV) charging infrastructure, including undertaking a scan of EV charging infrastructure regulations in other municipalities. The intent of the work was to look at options to integrate EV charging stations into City development regulations.

At the July 17, 2018 Workshop meeting, Council considered and discussed the proposed regulatory changes pertaining to electric vehicle options for new development and endorsed a consultation program to engage the development community.

At the July 17, 2018 Workshop meeting, Council passed the following resolution:

*That the bylaw amendments required for the integration of electric vehicle charging stations into new developments be brought forward for Council consideration following the consultation process outlined in this report titled “Electric Vehicle Charging Infrastructure: Options for New Development”, dated July 17, 2018.*

Following Council’s direction, staff reached out to development industry representatives to discuss the proposed set of regulatory requirements. The development community and interested stakeholders generally expressed broad levels of support for the proposed EV requirements for new development. A summary of the consultation process and outcomes was presented to Council at the December 11, 2018 Workshop meeting.

At the December 11, 2018 Workshop meeting, Council passed the following resolution:

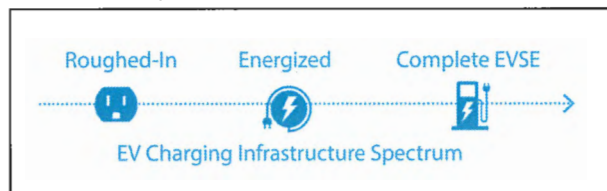
*That Council direct staff to continue work on electric vehicle charging infrastructure and report back to a future Council workshop meeting.*

## DISCUSSION:

### a) EV Charging Infrastructure Construction Costs

Currently, there are a range of EV charging infrastructure installation options for new development, which ranges from partial roughed-in configurations – when some of the infrastructure required for the charging of an EV is provided (making it easier to retrofit a building for EV charging to the future) – to complete Electric Vehicle Supply Equipment (EVSE) where all infrastructure required for the charging of an EV is provided (as illustrated in Figure 1 below).

Figure 1 – EV Charging Infrastructure Spectrum



Source: City of Maple Ridge

Generally, the costs related to installing EV charging infrastructure that befall end residents can be significantly reduced by pre-installing basic electrical equipment at the time of building construction. Construction and installation costs which are borne by the original developer depend on the calculation of unit electrical loads and the extent of EV charging infrastructure chosen.

Costs can be further reduced through the introduction of EV Energy Management Systems (EMS), also known as “load sharing”, “power sharing”, or “smart charging”, which refer to a variety of technologies that allow multiple vehicles to charge on the same circuit. When using a dedicated circuit, one circuit services one stall. When using Energy Management Systems, one circuit is able to service multiple stalls simultaneously by controlling the rate and timing of charging. This software can also track usage and enable or allocate billing to individual users. Such software solutions can be used in any situation with a shared parking area.

### I. Ground-Oriented Housing

For ground-oriented housing (i.e. single family, duplex, triplex, fourplex, courtyard housing, townhouse and street townhouse) the infrastructure installation breakdown is as follows:

- Rough-In Installation: sufficient panel capacity and conduit connecting the panel to the outlet.
- Energized Outlet Installation: sufficient panel capacity, installing a breaker on the unit's electrical panel, conduit with wiring, and outlet box in the parking stall.
- Complete EV Charging Infrastructure Installation: sufficient panel capacity, installing a breaker on the unit's electrical panel, conduit / raceway with wiring, and charging station in the parking stall.

To enable EV charging from a roughed-in installation, a resident would need to add wiring in the raceway, connect wires from the breaker to the outlet, and attach a charging station to the outlet. For energized outlets, a resident would need to attach a charging station to the outlet.

Construction costs for ground-oriented housing vary, as building and site configuration, calculated load and panel size impact costs. As a rough guide, general cost estimates can be considered as follows:

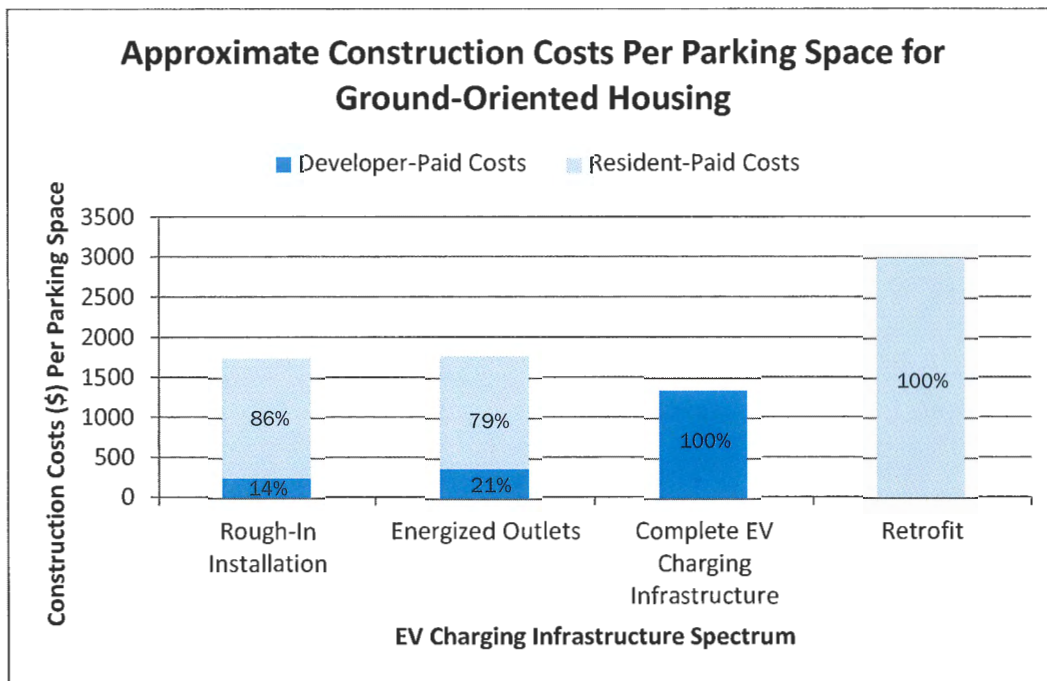
Table 1 - Construction Cost Comparison of EV Charging Infrastructure in Ground-Oriented Developments Per Parking Space

	Ground-Oriented Development	Charging Station
Rough-in Installation in New Construction	\$150 - 250	\$600 - \$1,400 (plus labour)
Energized Outlet in New Construction (Dedicated, Level 2)	\$250 - 500	\$600 - \$1,400 (plus labour)
Complete EV Charging Infrastructure Installation in New Construction	\$1,200 – 1,500	Already Included

The above costs are at the time of construction, which is the most opportune moment to future proof a new building. In comparison, retrofit costs may range approximately \$500 - \$5,000 per parking space, in addition to permit costs and the charging station for existing ground-oriented housing developments.

Figure 2 (on the following page) breaks down the above costs to demonstrate proportionally how much of the EV charging infrastructure is borne by the developer vs an end-resident across the EV charging infrastructure spectrum in a ground-oriented housing development. As illustrated below, there is a nominal difference in total cost per parking space between rough-in and energized outlets, with the end-resident paying the majority of the EV charging infrastructure costs in both instances. When installing complete EV charging infrastructure in new construction, the costs are borne entirely by the developer whereas the costs are borne entirely by the end-resident when retrofitting a parking stall for EV charging infrastructure.

Figure 2 – Approximate Construction Costs Per Parking Space for Ground-Oriented Housing



## II. Apartment Residential Development

For apartments the installation infrastructure breakdown is as follows:

- Rough-In Installation: sufficient panel capacity and may include conduit / raceway without wiring.
- Energized Outlet Installation: sufficient panel capacity, installing a breaker on the unit's electrical panel, conduit / raceway with wiring, outlet box in the parking stall, and an electrical meter with disconnect.
- Complete EV Charging Infrastructure Installation: sufficient panel capacity, installing a breaker on the unit's electrical panel, conduit / raceway with wiring, charging station in the parking stall, and an electrical meter with disconnect.

Construction costs for apartments vary considerably. Building and site configuration can be complicated and expensive to retrofit. Similar to the earlier ground-oriented discussion, installing EV charging infrastructure at time of construction is a cost-effective way of incorporating home charging opportunities in multi-family buildings (particularly when load sharing is employed).

As a rough guide, general cost estimates for apartment buildings, assuming that EV charging infrastructure includes 100% of parking spaces, are identified for consideration in Table 2 on the following page.

Table 2 – Construction Cost Comparison of EV Charging Infrastructure in an Apartment Building

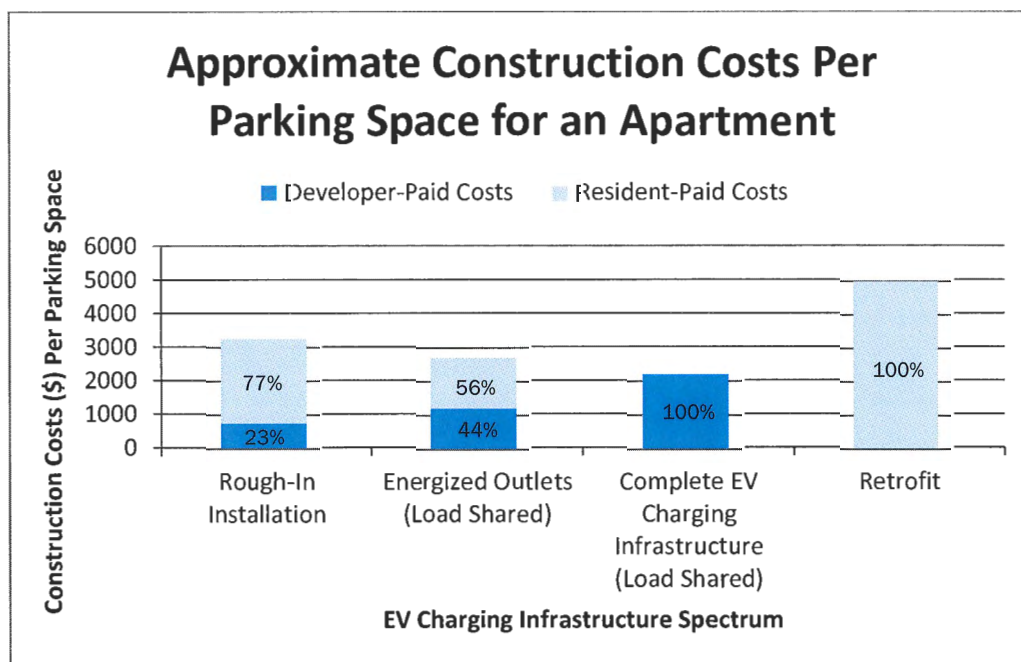
	Apartment	Charging Station Installation
Rough-in Installation in New Construction	\$750 – \$1,500	\$600 - \$1,400 (plus labour)
Energized Outlet in New Construction (Load Shared, Level 2)	\$760 - \$1,700	\$600 - \$1,400 (plus labour)
Complete EV Charging Infrastructure Installation	\$1,760 - \$2,700	Already Included

Again, to enable EV charging from a roughed-in installation, a resident would need to add wiring in the raceway, connect wires from the breaker to the outlet, and attach a charging station to the outlet. For energized outlets, a resident would need to attach a charging station to the outlet. Given the multi-family nature of the development in question, there may be additional permit and possible strata costs.

Retrofit costs may range approximately \$2,500 (load shared) - \$6,800 (dedicated circuit) per parking space, in addition to permit costs, for existing apartment housing developments.

The following chart (Figure 3) breaks down the costs identified in Table 2 (above) to demonstrate proportionally how much of the EV charging infrastructure is borne by the developer vs an end-resident across the EV charging infrastructure spectrum in an apartment building. In an apartment development, the end-resident pays more than half of the costs associated with installing EV charging infrastructure. However developers have the option to take advantage at the time of construction to install load sharing software as it reduces costs paid by the developer compared to an energized dedicated circuit scenario. As with ground-oriented housing developments, when installing complete EV charging infrastructure in new construction, the costs are covered entirely by the developer and the costs of retrofitting a parking stall for EV charging infrastructure are covered entirely by the end-resident.

Figure 3 – Approximate Construction Costs Per Parking Space for an Apartment



Overall, construction costs can vary considerably depending level of infrastructure to be installed and site configurations. Installing EV charging infrastructure at time of construction is the most opportune moment to future proof a building as the installation costs are considerably lower than the costs to retrofit later on. For ground-oriented housing developments, there is a nominal difference in costs at time of construction between providing roughed-in infrastructure vs an energized outlet. For apartment buildings, there is again a nominal difference in costs at time of construction when providing roughed-in infrastructure vs energized outlets which are load shared.

**III. Institutional Uses**

Having discussed further with the School District, staff note that current provincial funding does not cover capital costs associated with electric vehicle infrastructure for new schools. Recognizing these costs would be borne by the School District, staff recommend removing institutional developments from the proposed EV requirements. It is noted that there would be nothing precluding the School District from including EV charging infrastructure should the provincial funding formula change at some point in the future. The proposed changes are summarized in Table 3, below.

**b) Proposed EV Requirements for New Development**

Following Council's request for more information on construction costs to integrate EV charging stations into City regulations, this report provides Council with a revised set of regulatory requirements.

From the cost comparison, staff note that the cost implications to the development industry appear to be nominal when comparing the roughed-in and energized solutions. This is especially true when comparing the costs for requiring charging infrastructure for ground-oriented housing. However, as Council expressed a preference for the roughed-in approach, for ground-oriented residential development it is now proposed that one space for each principal dwelling unit in single family, duplex, triplex, fourplex, courtyard, townhouse, and street townhouse developments be *roughed-in* for Level 2 service.

For apartments, noting the cost difference for EV charging infrastructure, it is proposed that all off-street residential parking spaces be *roughed-in* for Level 2 service. It is also proposed that 50% of required visitor parking spots now be *roughed-in* for Level 2 service.

For commercial developments, it is proposed that all developments with 10 or more required off-street parking spaces require 10% of parking spaces to now be *roughed-in* for Level 2 service. For clarity, institutional uses are no longer included as part of these proposed requirements.

Table 3 – Summary of Proposed EV Requirements for New Development

<b>Ground Oriented Residential Development</b>	<b>Apartment Residential Development</b>	<b>Commercial Development</b>
Require 1 space for each principal dwelling unit of single family, duplex, triplex, fourplex, courtyard, townhouse and street townhouse developments to be <b>roughed-in</b> (Level 2). <ul style="list-style-type: none"> <li>Secondary suites and detached garden suites exempt.</li> </ul>	Require all off-street residential parking spaces in apartment developments to be <b>roughed-in</b> (Level 2). <ul style="list-style-type: none"> <li>50% visitor parking be able to achieve a minimum of Level 2 charging</li> </ul>	Require 10% of parking spaces to be <b>roughed-in</b> (Level 2). <ul style="list-style-type: none"> <li>Applicable to developments with 10 or more off-street parking spaces.</li> </ul>

## c) Other Considerations:

### I. Electric Vehicle Landscape

In May 2017, the Government of Canada announced that they are moving forward with provincial and territorial partners, industry and stakeholders, to develop a national strategy to increase the number of zero-emission vehicles, which include both Battery Electric and Plug-in Hybrid EV models, on Canadian roads.

In November 2018, the provincial government announced it would introduce legislation in 2019 to phase in targets for the sale of zero-emission vehicles. This legislation would set targets of 10% zero-emission vehicle sales by 2025, 30% by 2030, and 100% by 2040. The provincial government may also continue or expand the provincial incentive program for new car buyers.

Currently, there are the following incentives for the purchase or lease of a zero-emission vehicle:

- \$6,000 for a hydrogen fuel-cell vehicle
- \$5,000 for a new battery electric vehicle
- \$2,500 - \$5,000 of a plug-in hybrid electric vehicle

In addition, the SCRAP-IT Program is continuing which offers additional rebates for those who exchange a gas-powered vehicle for an electric vehicle. Incentives vary on the model and year of the gas-powered vehicle, however in 2019 the incentives are as follows:

- \$6,000 for a new electric vehicle incentive, if purchased from one of the program's participating dealerships; and
- \$3,000 for a used electric vehicle incentive, if purchased from one of the program's participating dealerships.

### II. Reduction of Carbon Pollution

The Government of British Columbia has introduced legislation to update the Province's greenhouse gas reduction targets. The *Climate Change Accountability Act* replaces the 2007 *Greenhouse Gas (GHG) Reduction Targets Act*. It sets new legislated targets of a 40% reduction in carbon emissions from 2007 levels by 2030, and a 60% reduction from 2007 levels by 2040. The current target of an 80% reduction in emissions by 2050 remains.

In 2007, the City of Maple Ridge's community greenhouse gas emissions were recorded at 366,366 tonnes. The Community Energy and Emissions Inventory (CEEI) provides an indicative inventory of energy use, greenhouse gas emissions and supporting indicators at the community level. Data is published for 2007, 2010, and 2012. The latest CEEI reports the City's community greenhouse gas emissions at 372,667 tonnes.

Electric vehicles are considered zero emission. For comparison purposes, and based on the number of users and sessions at City-owned EV charging stations, the avoided community greenhouse gas emissions for 2018 could be approximately 32,000 Kg (or 32 tonnes), with total accumulated community greenhouse avoided from City-owned EV charging stations since 2013 estimated at approximately 81,000 kg (or 81 tonnes).

#### **NEXT STEPS:**

Should Council so direct, staff would prepare draft regulations to amend the Off-Street Parking and Loading Bylaw to integrate the proposed electric vehicle charging infrastructure requirements. Should the bylaw be adopted, the Building Department will work with the Planning Department to



develop reference handouts for developers, including how Smart Charging and Energy Management Software can support EV charging infrastructure. As is customary with such bylaws, staff will continue to monitor and report back within one year on any impacts from the proposed EV charging infrastructure requirements, should they be adopted.

**INTERDEPARTMENTAL IMPLICATIONS:**

**Building Department**

The Building Department has been working in collaboration with the Planning Department on the development of EV charging infrastructure regulation. The Building Department supports and encourages the installation of EV chargers in the community.

**CONCLUSION:**

Council has previously directed the research and review of electric vehicle charging station requirements for new development in the City. The intent of the work was to look at options to integrate electric vehicle charging stations into City development regulations. This report provides an update to Council and recommends that staff be directed to amend the Off-Street Parking and Loading Bylaw to integrate the revised set of electric vehicle charging infrastructure requirements.

“Original signed by Amanda Grochowich”

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*Prepared by:* **Amanda Grochowich, MCIP, RPP  
Planner 1**

“Original signed by Christine Carter”

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*Reviewed by:* **Christine Carter, M.PL., MCIP, RPP  
Director of Planning**

“Original signed by Frank Quinn”

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*Approved by:* **Frank Quinn, MBA, P.Eng  
GM: Public Works & Development Services**

“Original signed by Kelly Swift”

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*Concurrence:* **Kelly Swift, MBA  
Acting Chief Administrative Officer**

**Appendix A – Electric Vehicle Overview**

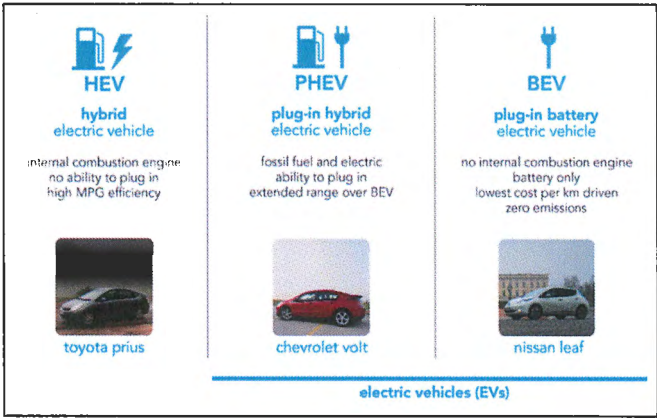
**a) Types of Electric Vehicles**

There are a number of different kinds of “electrified” vehicles in the market. There are two categories of plug-in electric vehicles (PEVs): plug-in electric vehicles (PHEVs) that can be powered by electricity from the grid or by gasoline, and battery electric vehicles (BEVs) that are powered exclusively by electricity.

- The **plug-in hybrid electric vehicle (PHEV)** has an electric powertrain and can be re-charged from the electric grid (plugged in). PHEVs also have an internal combustion engine or a range extender (also called an auxiliary power unit, APU) enabling travel of longer distances (the range extender drives a generator that charges the battery).
- The **plug-in battery electric vehicle (BEV)** only has an electric powertrain and the battery is recharged by plugging in. The range depends on the model type. New vehicles coming to market – the 2nd generation or “affordable long range BEVs” – have significantly longer ranges (e.g. a 2017 Nissan Leaf currently has a range of ~170km, the 2018 Nissan Leaf has a range of ~240km; and the 2017 Chevrolet Bolt has a range of over 350km). The “range limitation” of BEVs is suitable for most daily driving; however, without widespread access to public charging infrastructure, BEVs may not meet the needs of drivers travelling longer distances.

Automakers continue to electrify their fleets; bringing more BEV and PHEV to the market. As of 2018, there are approximately 40 BEV and PHEV models available for sale in Canada.

Figure 1 - Types of Electrified/Alternative Fuel Passenger Vehicle Technologies

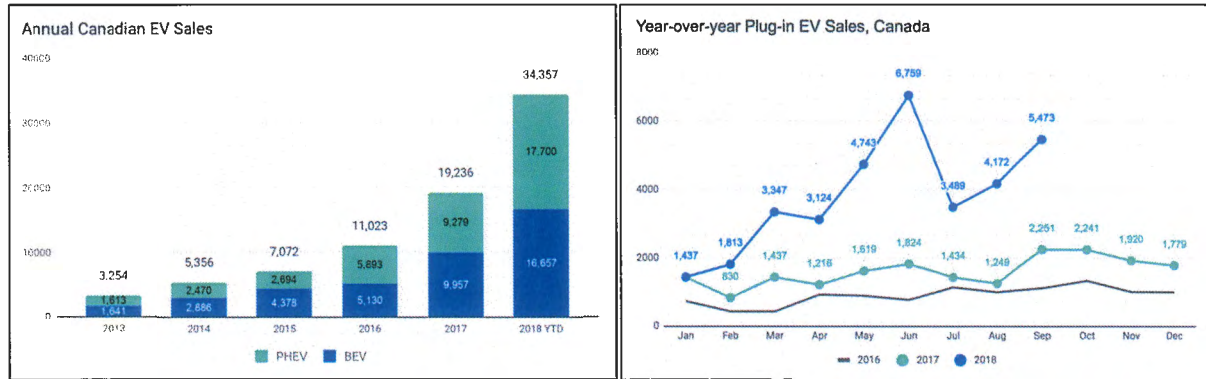


Source: C2MP Consulting

## b) Electric Vehicle Demand Update

EV ownership in Canada has steadily increased since 2012. Nearly 35,000 EVs were sold in Canada between January and the end of September 2018, an increase of 158% compared to the same time in 2017, as demonstrated in Figure 2 below.

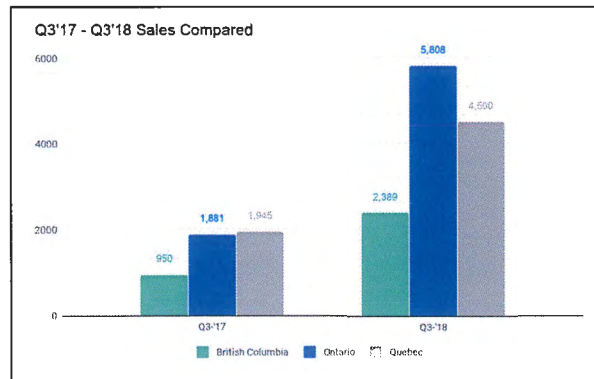
Figure 2 – Annual and Monthly Breakdown of Canadian EV Sales Data



Source: Fleetcarma.com

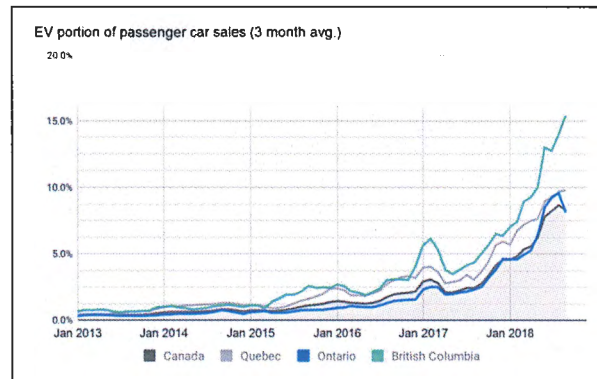
Third quarter sale results from 2018 (the latest sales numbers available) indicate that EV sales in Canada have increased 166% over Q3-2017. Ontario, Quebec, and British Columbia continue to remain as the top three provinces for electric vehicles sales. British Columbia saw a 151% increase in EV sales in Q3 2018 over Q3 2017 sales numbers, with approximately 2,400 EVs sold that quarter, as shown on Figure 3 below.

Figure 3 – Q3'17 – Q3'18 Top 3 Province Sales Comparison



Source: Fleetcarma.com

Figure 4 - EV portion of passenger car sales EV (3 month avg.)



Source: Fleetcarma.com

Nationally, the electric portion of new passenger car sales has risen to 8.3%. In British Columbia, the proportionate EV adoption rate has risen to 15%, as shown on Figure 4 above.

**c) Electric Vehicles in Maple Ridge**  
**I. Existing Policy and Regulatory Framework**

*Official Community Plan*

Alternative and ‘clean’ transportation options are recognized and supported within the City’s Official Community Plan (OCP) and the Hammond Area Plan Development Permit Guidelines for Hammond Village Commercial lands, respectively:

*Policy 5 – 40*      *Maple Ridge will promote energy efficiency to reduce air and greenhouse gas emissions by:*  
*b) encouraging alternative transportation initiatives, promoting ‘clean’ transportation options, and encouraging the use of public transit;*

*Policy 3.3.3*      *Where possible, include a dedicated parking space to car share vehicles and an electric vehicle charging station.*

*Zoning and Parking Bylaws*

The City does not currently have regulation in the Zoning bylaw requiring private electric vehicle charging infrastructure in new developments; however, the in-stream application 2017-462-RZ, which received first reading in June 2018, calls for at least one fast charging station for every 20 dwelling units as well as installing EV wiring – including visitor parking spots – for all parking spaces. In addition, approximately 10 other in-stream applications already voluntarily include or plan to include EV charging infrastructure of some sort.

Currently, the City’s Parking Bylaw is silent on electric vehicle charging stations requirements.

**II. Electric Vehicle Charging Infrastructure in Maple Ridge**

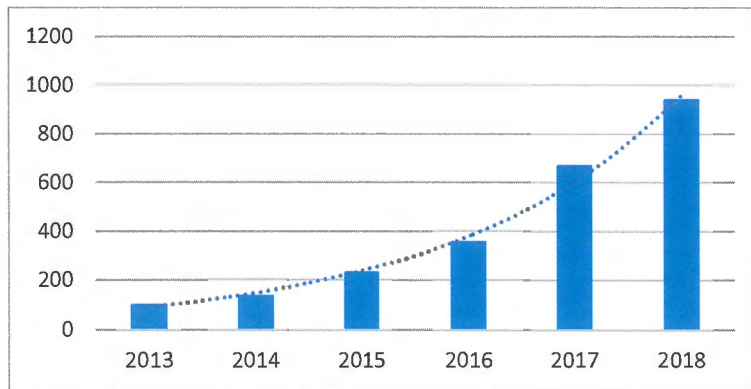
The City of Maple Ridge has had publicly available charging stations since 2013. Currently, there are three locations in the Town Centre and an additional unit at the Operations Centre. Recently compiled usage data indicates that City station usage has increased each year.

Table 1 – City of Maple Ridge EV Charging Infrastructure Usage Rates

<b>Year</b>	<b>Usage Over Previous Year</b>
2018	42%
2017	89%
2016	47%
2015	29%
2014	68%

Furthermore, in 2018, there were 940 users, as demonstrated on Figure 5 on the following page, who charged with one of the City-owned chargers, an increase of 42% over 2017. CMR Fleet Vehicles are not included in this total.

Figure 5 – Unique User Usage of City-owned EV Charging Stations



Source: City of Maple Ridge

#### d) Electric Vehicle Supply Equipment (EVSE) Technologies

There are three commonly used types of charging stations.

- Level 1 chargers use a standard house plug (found in many garages already) and provides the slowest charging, so it is good for overnight charging or all day at work. A Level 1 charger provides approximately 9 km of driving range for every one hour of charging.
- Level 2 chargers use a dedicated 240V circuit like the one used for a clothes dryer. In addition to being installed at home and at work, Level 2 charging stations are commonly found in public locations where people typically spend a couple hours, such as a community centre. A Level 2 charger can provide approximately 30 km of driving range for every one hour of charging. All of the EV chargers the City oversees are Level 2.
- Level 3 chargers, now typically called DC Fast Chargers (DCFC), are usually located along major transportation corridors. DCFCs provide a much stronger charge at a faster rate. A Level 3 charger can provide approximately 160 km of driving range for every one hour of charging, however not all electric vehicles can plug in to a DCFC.

The municipal scan summarized in the July 17, 2018 staff report indicated that 90% (ten out of eleven) of the reviewed municipalities in Metro Vancouver and Sea-to-Sky Region are opting for the energized middle ground configuration where all infrastructure required for the charging of an EV is provided, excluding the charging stations. This means that the outlet boxes or electrical receptacles located at each stall are “energized” (i.e. electrically wired) and are dedicated for the charging of an EV with an electrical system adequately sized to accommodate the charging of EVs.