CITY OF VANCOUVER

POLICY REPORT

Report Date: January 24, 2018
Contact: Ian Neville
Contact No.: 604.673.8246
RTS No.: 12345
VanRIMS No.: 08-2000-20
Meeting Date: March 14, 2018

TO: Standing Committee on City Finance and Services

FROM: General Manager of Planning, Urban Design and Sustainability

SUBJECT: Electric Vehicle Ecosystem Program Update

RECOMMENDATION

A. THAT the requirements for electric vehicle ("EV") charging infrastructure in new residential buildings in the applicable City by-law be amended such that all residential parking stalls, excluding visitor stalls, are EV ready;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment the necessary amending By-law generally in accordance with Appendix A.

B. THAT the majority of electric vehicle charging requirements and the bicycle end-of-trip facilities requirements for new construction be moved from the Building By-law to the Parking By-law;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment the necessary amending By-law generally in accordance with Appendix B.

C. THAT the Electrical By-law be updated to ensure that the electrical requirements in the Building By-law can be enforced;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment the necessary amending By-law generally in accordance with Appendix C.

D. THAT Council receive for information updates related to new public Electric Vehicle Charging stations throughout the City and utilization of existing stations.

E. THAT Council receive for information an update relating to the provision of preferential parking for zero emission vehicles in the City.

F. THAT, subject to approval of the foregoing recommendations, Council approve an increase of $750,000 to the multi-year capital project budget for EV Ecosystem Strategy, for improvements to the public charging network as part of the Electric Vehicle Ecosystem Strategy; source of funding to be the 2015-2018 Capital Plan (Emerging Priorities).

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

SUMMARY

As part of the overall plan to achieve Vancouver's Renewable City Strategy targets to decrease carbon pollution and transition to renewable energy, the City will need to address the transportation sector, which accounts for 41% of city-wide carbon pollution. Doing so will involve continuing to increase the share of trips made by active transportation and transit, and accelerating the transition to zero emission vehicles. This report is predominantly focused on accelerating the transition to zero emission vehicles.

In particular, the report:

- Recommends increasing the number of EV-ready parking stalls in new multi-family buildings so that each parking stall, excluding visitor stalls, is equipped with EV charging infrastructure.
- Recommends moving the new construction requirements relating to the number EV-ready parking stalls and the bicycle end-of-trip facilities from the Building By-law to the Parking By-law;
- Provides updates on the ongoing development of the City's public charging network for electric vehicles (EVs), and the City's development of a preferential parking policy for zero emission vehicles.
- Recommends an increase to the current multi-year capital project budget for EV Ecosystem Strategy Pilot to support the installation of several DC Fast Charging and Level 2 stations at various locations in the City.

In addition to these new City actions to support zero emission vehicles, staff continue to work with the provincial and federal governments, and BC Hydro to help advance a broader set of supportive policies and programs. Of particular importance would be a provincial or national policy referred to as a Zero Emission Vehicle mandate. This policy would set a minimum percentage of zero emissions vehicles (ZEVs) that vehicle manufacturers must sell in the province or country, as applicable, with that percentage increasing over time.

Increasing the supply of vehicles is critically important because there is a strong local demand, and based on a November 2017 City of Vancouver survey, only 30% of 27 Vancouver dealerships had even a single new ZEV that could be test driven and purchased. Further, the City fleet, which continues to lead Canadian municipalities on ZEV adoption, is experiencing the impacts of newly introduced ZEV mandates elsewhere as manufacturers divert supply to

jurisdictions with ZEV mandates, such as Quebec, California, Oregon, and eight other US states. This is further reducing the already limited availability of ZEV models locally.

Staff continue to regularly emphasize the importance of a ZEV mandate in our work with the provincial and federal governments and support them in working towards the policy in BC or Canada.

Strategic Analysis

The recently adopted Renewable City Action Plan was informed by economic modelling from Navius Research that the City co-commissioned with BC Hydro. For the City to achieve its renewable energy objectives, the modelling results point to the need for significant mode share gains for walking, cycling and transit, and a complete transition to zero emission vehicles – predominantly through electrification. In combination, the growth in active transportation and transit, and the transition to electric vehicles will help the City meet its climate targets, improve air quality, reduce noise pollution, and help save residents and businesses money.

After accounting for the actions in Transportation 2040 to increase active transportation and transit, the same economic modelling forecast over 300,000 light duty vehicles will still be on Vancouver's roads in 2050. With an average vehicle lifetime of approximately 13 years, the majority of vehicles and virtually all new vehicle sales will need to be zero emissions by the mid-2030s, which is just over one vehicle lifetime in the future. Achieving a transition of that pace will require continued advances in the quality and diversity of electric vehicles, and concerted policy support from all levels of government.

This report presents updates on actions approved by Council in the 2016 EV Ecosystem Strategy and the Renewable City Action Plan. These actions seek to remove barriers and to support EV uptake in both the short- and long-term.

A. Updating EV-Readiness Requirements for new residential buildings

In 2009, the City introduced requirements for specified percentages of parking stalls in new residential and commercial buildings to be equipped with EV charging infrastructure. The percentages for different building types are shown in the table below.

Building type	**EV-Readiness Requirement, New Construction**
Single-family attached and detached	Each garage or carport
Multi-unit residential buildings	20% of parking stalls
Commercial buildings	10% of parking stalls

A Greenest City Scholar project conducted in 2017 showed that 7,996 EV charging circuits should have been supplied to the 166 multi-family building permits issued between 2014 and 2017 based on the City's minimum requirements. However, a total of 11,234 circuits were installed in MURB parking areas during that period, indicating that the City's requirements have been successful in supporting a market for EV-readiness in multi-family buildings: many builders were actively using EV-readiness as a marketing tool. In some cases multi-family buildings were constructed with 100% of their parking stalls equipped with EV charging circuits.

The requirements for new multi-unit residential buildings were set lower than single-family homes (20% of stalls versus 1 per garage/carport) at the time because the cost of meeting a more stringent standard was too high for the larger buildings. The downside of the lower standard is that up to 80% of parking stalls in new buildings are not EV-ready, and as such will need to be retrofitted at some point in the life of the building to support EV charging.

The emergence of "EV Energy Management Systems" (also known as "smart charging", "power sharing" or "load sharing") has changed this context significantly. These technologies, which are now available locally, allow multiple EVs to charge simultaneously while not exceeding the capacity of an electric circuit.

Implementing such technologies in multi-family buildings can significantly reduce the first cost of providing EV charging infrastructure by reducing the size of building electrical systems that must be installed. They also have the ability to help users reduce their energy costs by optimizing the timing of vehicle charging, while still ensuring users receive sufficient charge. The potential costs savings would grow if future BC Hydro rate structures include the increasingly common practice of time-of-use pricing.

In addition to the evolving technology landscape, updates to the Canadian and BC Electrical Codes recognize those load sharing approaches. As a result, the 100% standard is now cost-effective in all types of new residential construction. Because of the advances in technology and updates to the electrical code, the City of Richmond has already adopted EV-readiness requirements for new residential construction that are equivalent to the changes recommended in this report.

The City's *Standards of Maintenance Bylaw* No. 5462 Section 19.1 requires that electrical systems in new and existing buildings is accessible and in good working order. This includes any EV charging infrastructure in these buildings.

B. Moving EV-Readiness and End-of-Trip Facilities requirements to the Parking By-law

Requirements related to life safety and electrical equipment specifications are appropriate for the Building By-law and will remain there. Conversely, land-use standards such as the Parking By-law are the appropriate instrument for performance standards, which is the primary rationale for moving the EV-readiness and end-of-trip facilities requirements to the Parking By-law. In addition, placing the requirements in the Parking By-law allows other BC Local Governments to replicate Vancouver's approach, which will help support active transportation and electric vehicle adoption across the province.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In November 2015, City Council approved the Renewable City Strategy, committing to derive all energy from renewable sources before 2050. This includes action in general to transition to renewable transportation, and specific actions to develop an electric vehicle infrastructure strategy and to develop a preferential parking rule(s) for zero emission vehicles.

In November 2016, City Council approved the EV Ecosystem Strategy, which established 32 priority actions to be undertaken to improve access to electric vehicle ("EV") charging infrastructure between 2016 and 2021. The EV Ecosystem Strategy formalized the City of Vancouver's role as a provider of, and a market enabler for, electric vehicle charging over the

next five years. Actions within the strategy directly relevant to the recommendations in this report include:

> H1. Expand building requirements for EV charging readiness in MURBs such that each resident has access to EV charging in their own parking stall.
>
> P1. Develop charging hubs that support residents, commercial fleets, EV taxis and EV car-sharing.
>
> P2. Improve public Level 2 charging access and visibility.

In November 2017, City Council approved the Renewable City Action Plan. The Action Plan reaffirmed the City's intent to develop a preferential parking policy for zero emission vehicles (T.14), expand building requirements for EV charging readiness (T.16), expand the public fast charging network (T.12), and improve the public level 2 charging network (T.11).

REPORT

> A. Updating EV-Readiness Requirements for new residential buildings

Two substantive changes are proposed for EV-readiness requirements for new multi-unit residential buildings:

> 1) increasing the EV-readiness requirement from 20% to 100% of new stalls (excluding visitor stalls); and
>
> 2) adding an alternative compliance pathway based on a performance standard that would allow EV Energy Management Systems to be used.

EV Energy Management Systems include a variety of technologies that can control the electrical load associated with charging electric vehicles. Many EV Energy Management Systems for multi-unit residential buildings (MURBs) allow multiple charging points to safely use a single circuit simultaneously. Such systems can greatly reduce the total amount of electrical supply that a building requires by sharing these loads. EV Energy Management Systems essentially reduce the amount of electricity delivered at any one charging point as more vehicles connect.

The alternative compliance pathway will be a performance standard approved by the Chief Building Official. The intent of the performance standard is to provide a sufficient rate of electric vehicle charging such that electric vehicles are able to fully charge daily over the average times they are normally home or at work and available 97 per cent of the time, based on the daily driving distance statistical distribution of Metro Vancouver households and average EV energy efficiency.

By requiring a given performance standard, the proposed approach ensures that the amount of energy does not go below a specified amount, which would affect the ability of residents to effectively charge their vehicles overnight. At the same time, a performance standard will allow electrical designers more flexibility in designing effective building systems that make the best use of electrical supply.

The performance standard that the Chief Building Official will approve will be guided by a Technical Bulletin, presently under development. This Technical Bulletin will provide background information on different Energy Management System types, and will provide

guidance on the required energy from different configurations, to ensure that residents receive the minimum required energy to recharge their vehicle overnight, assuming a typical day's driving distance and energy consumption for the Metro Vancouver region.

Projects implementing EV energy management systems must also provide communications technology necessary for the function of an EV energy management system (e.g. cellular, wireless, or cabled infrastructure). This will likely have co-benefits of increased safety in parking areas, and future-proofing for the arrival of autonomous vehicles.

As part of their process to establish EV-readiness requirements, the City of Richmond, BC recently commissioned a costing study from AES Engineering. The study examined the total cost of various construction scenarios for EV charging, weighing the up-front costs of construction against future retrofit costs to expand EV infrastructure in multi-family buildings.

The cost of moving from the City of Vancouver's current requirements for multi-unit residential buildings to a requirement for 100% of stalls being EV-ready (managed via a load sharing system) would be up to $300 per parking stall. In many scenarios, it would be slightly less expensive to meet the proposed requirements compared to current requirements. In contrast, the cost of maintaining the current requirements and retrofitting a parking stall for EV charging in the future would be up to $4,000 per stall.

The requirements for commercial buildings will not be changed in this update. Updated requirements for commercial parking areas supporting commuters driving electric vehicles will be brought forward in a future update to Council after staff have time to assess the costs and consult with stakeholders.

Visitor parking stalls have been excluded from the requirement because:

(1) They would be challenging for a strata to manage the costs for, given the current status of EV infrastructure regulation in stratas, and visitors accessing a charging circuit in an unassigned parking stall would result in a cost for a strata as a whole that would be difficult to allocate to an individual host;and

(2) They would provide little benefit to residents, since any longer-term visitors to a building could access their host's charging circuit, while short-term visitors would see little gain from a low-power configuration that the performance standard would dictate.

Implementation Plan

If Council approves the proposed By-law changes, they will come into effect January 1, 2019. Multi-unit residential developments that have applied for Development Permits prior to the effective date may apply for a Building Permit to construct in compliance with previous applicable requirements for the duration of the time that their Development Permit is valid.

City staff and proponents seeking to use the performance standard for compliance will be supported by a technical bulletin outlining the intent described above. The bulletin will include guidelines for different load sharing scenarios in different sized developments, along with other pertinent technical information. The bulletin will also communicate that EV energy management systems can be used immediately as a compliance option for the existing requirements in order to provide developers with additional opportunities to increase their familiarity with the technology.

Capacity Building

To prepare City staff and developers for the changes, work will include, but not be limited to:

- Training for development planners, plan checkers and inspectors on what acceptable applications look like under the new by-law.
- Sustainability staff working with development planners, plan checkers and inspectors on the initial projects utilizing EV energy management systems to ensure a smooth transition to the new by-law.
- Hosting at least three training and information sessions for developers and other interested participants to explain the By-law changes, the technology solutions, and the implications for building owners and managers.
- By the end of 2018, publishing examples of how developers are choosing to utilize EV energy management systems.

Where appropriate, staff will coordinate with Richmond on capacity building initiatives given the high degree of alignment between the proposed changes in this report and Richmond's recently approved requirements. In addition to the City led work, AES Engineering is developing a list of firms capable of providing EV energy management systems that they will be making publicly available. City staff will make the list of firms available to developers seeking information on potential technology providers to work with.

B. Moving EV-Readiness And Bicycle End-Of-Trip Facilities Requirements To The Parking By-law

This update recommends relocating standards for the number of EV charging stations to be provided into the Parking By-law. Locating these requirements in the Parking By-law will allow oversight of electric vehicle requirements by Engineering, and facilitate future improvements to Electric Vehicle Charging Requirements that support adoption of electric vehicles. Additionally, because the Parking By-law is connected to zoning requirements instead of building type, standards that allow for more developer flexibility can be implemented. Such standards can be more reflective of building use, rather than just building type.

This update recommends relocating language related to the quantity and location of water closets, wash basins, showers and grooming stations from the Building By-law into the Parking By-law. Incorporation of these items into the Parking By-law will provide the authority for staff in Transportation to review and comment on the quality and quantity of end of trip, leading to improved facilities.

Additionally, the language surrounding end of trip facilities has been updated to be more inclusive by removing references to gender.

C. Updating the Electrical By-law

The Electrical By-law *5563* is administered by Development, Buildings, and Licensing. Plan checkers in that group have technical expertise with respect to the design of electrical systems, including electric vehicle energy management systems and electric vehicle charging infrastructure.

Presently, electric vehicle charging infrastructure is solely managed under the Building By-law for the purposes of protecting life safety. Any non-life-safety aspects may therefore go un-verified under the present regime. This gap was identified by both City plan checkers, and in a Greenest City Scholar report that reviewed the effectiveness of the City's EV infrastructure requirements in new homes.

The amendments proposed for the Electrical By-law will ensure that non-life-safety aspects of EV infrastructure design, such as the performance of electric vehicle energy management systems, is verified by qualified staff.

D. Public Charging Network Expansion

The City of Vancouver currently operates a network of 70 publicly accessible Level 2 charging stations throughout the City, and BC Hydro operates a DC Fast Charger at Empire Fields. Those stations provided a combined 35,484 charging sessions in 2017. In support of the EV Ecosystem Strategy's intent to improve the public charging network through the deployment of DC fast charging hubs and expanded access to Level 2 infrastructure, the following projects are presently underway:

- The City is installing a DC Fast Charging and Level 2 Station at Telus World of Science by early March (estimated cost $0.1M)
- The City is replacing the BC Hydro-owned DC Fast Charger at Empire Fields, and adding a DC Fast Charger and Level 2 station by early March (estimated costs $0.1M)
- BC Hydro is installing two DC Fast Charging stations on Homer St., adjacent to the BC Hydro head office, under the City's Curbside Charging Pilot Project, by March 31, 2018. These stations will be installed at no cost to the City.
- BC Hydro is installing a DC Fast Charger adjacent to the Arbutus Greenway on West Boulevard near W.39th Ave. (a City-owned parking lot), by March 31, 2018.This station will be installed at no cost to the City.
- The City is installing two DC Fast Chargers and three Level 2 stations, in cooperation with the South Hill Business Improvement Association, near E.47th Ave. and Fraser St., by July 2018 (estimated costs $0.2M)
- The City is installing two DC Fast Chargers and one Level 2 station on Richards St. at Smithe St., in coordination with the construction of a new park. Estimated installation in approximately September 2018 (estimated costs $0.2M)
- The City is installing two Level 2 charging stations at each of Trout Lake, Killarney, and Dunbar Community Centres, as approved by the Vancouver Park Board on January 15, 2018. Estimated completion is prior to July 2018 (estimated costs $0.05M)

The estimated costs noted here are as per Appendix A in User Fees for City Owned and Operated Public Electric Vehicle Charging Stations approved by Council in June 2017 (RTS 12009). The additional $750,000 of funding requested in this report also allows for a small contingency ($0.1M) for the above items.

When these projects are complete, the public network that the City operates will have grown to 80 Level 2 stations and 9 DC Fast Chargers. Staff continue to work to identify additional sites for Level 2 stations and DC Fast Chargers, which will be installed from late 2018 through 2021 as funding allows.

E. Preferential Parking For Zero Emissions Vehicles

While a robust home, workplace and public charging network is a prerequisite to EVs being a viable choice for many people, preferential parking is one of the tools that can make EVs (and other types of zero emissions vehicles) more attractive relative to internal combustion vehicles. A 2017 Pacific Institute for Climate Solutions Study of potential policy options to achieve Vancouver's Renewable City Strategy objectives found that preferential parking could be one of the City's most important tools to reduce carbon pollution from transportation.

Cities around the world are using preferential parking policies to encourage zero emission vehicles. These efforts include discounted parking rates, reserved access for certain parking spaces, preferential access to parking permits, and others. The only precedent currently in place in Vancouver is the discounted parking rates the City provides for electric motorcycles.

In providing preferential parking for zero emissions vehicles, the City of Vancouver is committed to approaches that respects well established objectives of encouraging active transportation and transit, and minimizing congestion. Many cities around the world have similar dual objectives with Oslo, Amsterdam and Copenhagen being good examples of cities setting high bars for active transportation, transit and the transition to EVs.

Based on an internal review of the approaches being used in other cities, staff intend to move forward with more detailed design and consultation on the following three approaches:

1. Reserved parking for EVs that are charging at all City-owned EV charging infrastructure and all EV charging infrastructure on City-owned land. This approach is intended to ensure that the charging infrastructure that the City has invested in, and/or making land available for, is utilized for its intended purpose. For most scenarios, this approach is already standard practice in the City, but staff will consider how EV charging installations may change over time (e.g. private companies installing charging stations on City land) so that there is a framework that ensures the stations are reserved for EV charging.

2. Reserved parking stalls in preferred locations (e.g. close to the entrance) for zero emission vehicles parked at City-owned EasyPark lots. These stalls would not contain charging infrastructure but would be reserved for zero emission vehicles only. This approach would be similar to the reserved parking already available for carshare vehicles in EasyPark lots and is a very cost effective way to encourage adoption. To ensure the approach continues to provide a clear incentive for people to switch to zero emissions vehicles, the number of reserved stalls would be increased based on the observed demand.

   To simplify the administrative demands for this option, staff intend to rely on the provincial government's zero emissions vehicle program. This program allows owners of ZEVs to register with the province and receive a certification sticker for their vehicle. Accepted vehicles include battery electric vehicles, plug-in hybrid electric and hydrogen fuel cell vehicles. The program is currently used to allow ZEV access to the province's high occupancy vehicle highway lanes.

3. Reserved parking and access to DCFC fast charging infrastructure for large commercial electric vehicles. Electric tour buses are a good example of a vehicle

type that could benefit from this approach because it would allow them to minimize the driving distance at the start/end of their routes, thereby getting the most value out of the vehicle range per charge. The commercial users would still need to pay for the parking and use of the charging infrastructure. The parking could be on-street or off-street. Commercial vehicle operators have told the city this would remove significant barriers to the adoption of zero emission vehicles due to better proximity to their customers and not requiring a capital investment in the charging infrastructure.

For the three approaches, staff intend to develop a robust monitoring plan to understand how residents and businesses are responding, and use the results to adjust the approaches as necessary. Key questions to answer through the monitoring plan will be:

a) Are the approaches providing an adequate incentive to support the transition from internal combustion vehicles to zero emission vehicles?
b) Is the number of reserved parking spaces adequate to meet the zero emission vehicle demand?
c) Are the approaches resulting in an increase in the number of vehicles or vehicle-kilometers-travelled?

There are two notable approaches that are used commonly in other cities that staff do not intend to pursue at this time: discounted parking rates for zero emission vehicles and reserved on-street parking for zero emission vehicles (except where there is curbside EV charging infrastructure). Regarding the option of discounted rates, staff have concerns that this option would lead to increased driving, be a difficult incentive to phase out as the number of ZEVs increase, and compromise the City's performance-based pricing strategies to manage parking (i.e. using price as a way to achieve a target occupancy of 85%). Regarding the option of reserved on-street parking, staff believe that focusing on a larger number of reserved off-street spaces in preferred locations will be a more impactful approach with fewer conflicts due to the growing number of demands for curbside space.

Consultation & Engagement

The proposed updates to the *Parking By-Law*, *and* Building By-Law*,* were developed in consultation with other municipal governments and key stakeholders such as the Urban Development Institute, the Condominium Homeowners Association, electric vehicle supply equipment manufacturers, the Vancouver Electric Vehicle Association and others, between September 2017 and February 2018. These consultations were complementary to the extensive consultation conducted in developing the 2016 EV Ecosystem Strategy.

Staff in the Sustainability Group have committed to conduct additional training and capacity building prior to the new requirements' coming into force. This additional engagement will be conducted both with City staff and members of the building industry. It will relate to both the technical implications of the new requirements, as well as legal obligations under both City and provincial jurisdiction. Wherever possible, Sustainability staff will work in concert with staff from other municipalities engaging in similar capacity building.

Implications/Related Issues/Risk (if applicable)

Financial

This report seeks approval for an increase of $750,000 to the current multi-year capital project for the EV Ecosystem Strategy, for the installation of DC Fast Charging stations and Level 2 stations at various locations in the City. With this recommended increase, the multi-year project budget will be $1,250,000. The source of funds for the multi-year project budget increase will be the 2015-2018 Capital Plan (Emerging Priorities).

Expenditures relating to this multi-year capital project budget adjustment will be managed within the overall 2018 Capital Expenditure Budget.

Table 1 - Summary of Planned Expenditures in 2018

Location	Total Units	DCFC	Level 2	Anticipated Cost
Science World	2	1	1	$0.1M
Empire Fields	2	1	1	$0.1M
South Hill BIA	5	2	3	$0.2M
New Park at Richards & Smithe	3	2	1	$0.2M
Community Centres: • **Trout Lake** • **Killarney** • **Dunbar**	6	0	6	$0.05M
Contingency				$0.1M
Total	**18**	**6**	**14**	**$0.75M**

Legal

A draft amending By-law proposed for the Building By-law as part of this report is included in **Appendix A**.

A draft amending By-law proposed for the Parking By-law as part of this report is included in **Appendix B**.

A draft amending By-law proposed for the Electrical By-law as part of this report is included in **Appendix C**.

* * * * *

Draft By-Law to amend

Building By-law No. 10908

regarding electric vehicle charging stations and bicycle end-of trip facilities

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. In section 1.4.1.2.(1) of Book 1, Division A, Part 1, Council strikes out the definition of *Grooming station*.

2. In section 1.4.1.2.(1) of Book 1, Division A, Part 1, Council adds the following new definitions in correct alphabetical order:

> "*Electric vehicle energy management system* means a system used to control electric vehicle supply equipment loads through the process of connecting, disconnecting, increasing, or reducing electric power to the loads and consisting of any of the following: a monitor(s), communications equipment, a controller(s), a timer(s), and other applicable device(s).
>
> *Electric vehicle supply equipment* means a complete assembly consisting of cables, connectors, devices, apparatus, and fittings installed for the purpose of power transfer and information exchange between the branch circuit and the electric vehicle."

3. Council strikes out section 3.7.2.12. of Book 1, Division B, Part 3, Bicycle Parking Facilities.

4. In Book 1, Division B, Part 10, Council strikes out Sentences (2) through (6) of section 10.4.3.1. and substitutes the following:

"

2) Where the requirements of section 4.14.1(a) of the Parking By-Law would cause the *dwelling unit* calculated load to exceed 200 A in *one-family dwellings*, *two-family dwellings*, *one-family dwellings with secondary suite* or a *lock-off unit, two family dwellings with secondary suites* or a *lock-off unit*, *row housing*, or *laneway houses*, the installation of an energized outlet for Level 2 charging may be omitted provided that a minimum nominal trade size of 21 raceway supplied with pull string leading from the *dwelling unit* panelboard to an electrical outlet box is installed in the *storage garage* or carport and is labelled to identify its intended use with the *electric vehicle supply equipment*.

3) Where an *electric vehicle energy management system* is implemented, *Chief Building Official* may specify a minimum performance standard to ensure a sufficient rate of electric vehicle charging."

5. In Book 1, Division B, Part 10, Council strikes out section 10.4.3.2., Electrical Rooms.

Draft By-Law to amend

Parking By-law No. 6059

regarding electric vehicle charging stations and bicycle end of trip facilities

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. In section 2, Council adds the following definitions in correct alphabetical order:

"**Electric Vehicle** means a vehicle that uses electricity for propulsion, and that can use an external source of electricity to charge the vehicle's batteries;

Electric Vehicle Supply Equipment means a complete assembly consisting of cables, connectors, devices, apparatus, and fittings installed for the purpose of power transfer and information exchange between the branch circuit and the electric vehicle;

Energized Outlet means a connected point in an electrical wiring installation at which current is taken and a source of voltage is connected to supply utilization equipment;

Level 2 Charging means a Level 2 electric vehicle charging level as defined by SAE International's J1772 standard;".

2. In section 2, Council adds the following definition in correct alphabetical order:

"**Grooming Station** means facilities for grooming;".

3. In section 4, Council adds the following:

"**4.14 Required Parking Spaces for Electric Vehicle Charging**

4.14.1 For each:

(a) one-family dwelling, two-family dwelling, one-family or two-family dwelling with a secondary suite or lock-off unit, rowhouse, and laneway house, each storage garage or carport shall be provided with an energized outlet capable of providing Level 2 charging or higher to the storage garage or carport, except where the provisions of Sentence 10.4.3.1.(2) of Division B of the Building By-law apply;

(b) multiple dwelling, multiple dwelling component of a multiple-use development, or rowhouse, all parking spaces provided for residential use, excluding visitor parking spaces, shall be provided with an energized outlet capable of providing Level 2 charging or higher to the parking space;

(c) commercial building or commercial component of a multiple-use development with ten or more parking spaces, a minimum of one parking space for every ten parking spaces, plus one space for any additional parking spaces

that number less than ten, shall be provided with an energized outlet capable of providing Level 2 charging or higher to the parking space; and

(d) commercial building or commercial component of a multiple-use development with less than ten parking spaces, a minimum of one parking space shall be provided with an energized outlet capable of providing Level 2 charging or higher to the parking space.

4.14.2 Energized outlets provided pursuant to section 4.14.1 above shall be labeled for their intended use for electric vehicle charging and installed in conformance with Sentence 10.4.3.1(1) of Division B of the Building By-law."

4. In section 6.5, Council:

a. strikes out the title "Clothing Lockers" and replaces it with "End of Trip Facilities";

b. in section 6.5.1, strikes out "0.7" and replaces it with "1.4", and strikes out the words "for each sex";

c. in section 6.5.1, deletes the following note:

"[See Section 3.7.4.10 of the Building By-law for shower and other change facilities required when the number of required Class A bicycle spaces exceeds 3.]"; and

d. adds the following sections:

"6.5.2 Where Class A bicycle spaces are required for a non-dwelling use, water closets, wash basins, showers and grooming stations shall be provided in accordance with sections 6.5.4 and 6.5.5.

6.5.3 Despite the provisions of section 6.5.2, additional water closets, wash basins, showers and grooming stations are not required if on-site facilities are provided as part of an employee fitness centre, provided these facilities meet or exceed the requirements of sections 6.5.4 and 6.5.5, are accessible to employees before and after their work shifts, and are located conveniently in relation to employee Class A bicycle spaces.

6.5.4 The number of water closets, wash basins and showers required by section 6.5.2 shall conform to Table 6.5.

Table 6.5
Bicycle End of Trip Facilities
Forming part of 6.5.4

Required Number of Class A Bicycle Spaces	Minimum Number of Fixtures		
	Water Closets	**Wash Basins**	**Showers**
0-3	0	0	0
4-29	2	2	2
30-64	4	2	4
65-94	6	4	6
95-129	8	4	8
130-159	10	6	10
160-194	12	6	12
Over 194	12 plus 2 for each additional 30 bicycle spaces or part thereof	6 plus 2 for each additional 30 bicycle spaces or part thereof	12 plus 2 for each additional 30 bicycle spaces or part thereof

6.5.5 There shall be no less than 1 grooming station for each shower provided, and each station shall be:

(a) separate from the wash basin;
(b) equipped with a mirror and an electrical outlet; and
(c) equipped with a counter top with a minimum width of 600 mm and a minimum depth of 250 mm.".

Draft By-Law to amend

Electrical By-law No. 5563

regarding electric vehicle charging stations and bicycle room electrical outlets

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. Council adds a new section 7.3.7 as follows:

"7.3.7 Electric Vehicle Charging

Where required by the Building By-law, an owner shall comply with the electrical requirements governing Electric Vehicle Charging in Part 10 of that By-law."