

# Report to Council



**Date:** February 7, 2022  
**To:** Council  
**From:** City Manager  
**Subject:** Electric Vehicle Readiness Requirements for All New Residential Developments  
**Department:** Policy and Planning

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**Recommendation:**

THAT Council receives, for information, the report from the Policy & Planning Department, dated February 7, 2022 with respect to electric vehicle (EV) readiness requirements for all new residential developments;

AND THAT Council directs staff to include the following EV readiness requirements as part of forthcoming Kelowna Zoning Bylaw updates:

- All new residential developments have a minimum of 1 energized electric vehicle outlet per dwelling unit (capable of providing Level 2 charging)

AND FURTHER THAT Council directs staff to investigate EV charging infrastructure requirements for new institutional, commercial, industrial, and service station developments, and report back with recommendations for these categories.

**Purpose:**

To present information and recommendations on EV readiness requirements for all new residential developments as part of forthcoming Kelowna Zoning Bylaw updates.

**Background:**

*Previous Council Resolution*

Resolution	Date
THAT Council receives, for information, the report from Planning and Development Services, with respect to the City of Kelowna Community Electric Vehicle & E-Bike Strategy.	September 27, 2021

AND THAT Council endorse the objectives and recommended actions outlined in the City of Kelowna Community Electric Vehicle & E-Bike Strategy.

AND FURTHER THAT Council directs staff to include electric vehicle (EV) charging infrastructure requirements for new residential, institutional, commercial, industrial, and service station developments as outlined in the attached City of Kelowna Community Electric Vehicle & E-Bike Strategy in the forthcoming Kelowna Zoning Bylaw update.

AND FURTHER THAT Council directs staff to pursue stakeholder engagement, as part of the Zoning bylaw update engagement, for EV charging infrastructure requirements in new residential, institutional, commercial, industrial, and service station developments.

**Discussion:**

On September 27, 2021, Council endorsed the City’s Community EV & E-Bike Strategy, which outlines various initiatives to accelerate the shift to EVs and E-Bikes to help reduce greenhouse gas (GHG) emissions. To achieve the Strategy’s vision of being a city where charging an EV is easy, convenient, and affordable, Council directed staff to “include electric vehicle (EV) charging infrastructure requirements for new residential, institutional, commercial, industrial, and service station developments” in the forthcoming Kelowna Zoning Bylaw update.

“EV Readiness” means that a parking space features an energized electrical outlet capable of charging an EV when charging equipment is installed in the future. This report focuses on EV readiness requirements for all new residential development. Requirements for institutional, commercial, industrial sectors and services station EV requirements will be proposed at a future date. Important definitions relevant to this EV Readiness proposal are outlined in Attachment 1.

Recent sales trends show rapidly increasing EV adoption rates in BC, which is bolstered by strong federal and provincial policies. Current federal and provincial policies require 100 per cent of passenger vehicle sales to be zero emissions vehicles (ZEV) by 2035 (nearly all ZEV sales are EVs). BC also has stringent interim EV sales mandates of 26 per cent (by 2026) and 90 per cent (by 2030) in its CleanBC Roadmap to 2030.

BC leads Canadian provinces in EV registrations, where EVs represented 12.3 per cent of overall automobile sales in 2021. In Kelowna, the EV growth trend has been similar. There were 525 EVs registered in the community in 2020, compared to 370 in 2019, 180 in 2018, and 110 in 2017. Kelowna’s EV community survey indicated that about one-third of non-EV owners plan to purchase a new vehicle within two years, and another one-third within two to five years. Seventy per cent of non-EV owners identified an EV as their first choice for their next new automobile.

Kelowna’s 2021 EV engagement survey estimates that 84 per cent of current EV charging is done at home. 80 per cent of non-EV owners who responded to the survey also envisioned they would primarily charge at home. Results of this survey indicate that charging availability at home will be critical to enable a transition to EVs.

Despite the importance of home charging, retrofitting existing buildings can be legally complicated and costly, especially for multi-family buildings. Swapping parking stalls between EV and non-EV owners can be legally challenging or impossible, depending on the strata designation of parking stalls.

Residents in multi-family buildings also commonly vote against requests for EV charging due to their legal complexity or perceived negative impacts to residents.

Other BC Municipalities have commissioned engineering studies to examine the up-front costs for various EV infrastructure types, including 100 per cent EV ready installations (Table 1). These studies show that costs for 100 per cent EV ready installations in new multi-family construction can range from approximately \$300 to \$3,000 per parking stall, depending on building type, location, and design strategy used. Where electrical loads are shared across numerous EV chargers, which is common practice today through use of an Electric Vehicle Energy Management System (EVEMS – also called “smart charging”), costs are estimated to fall to \$1,600 or less per parking stall regardless of building type. For most types of EV ready installations, retrofitting existing multi-family buildings can cost three or more times that of new construction.

Table 1: Summary of EV Readiness Costs from Available Studies

Engineering Study	Study Focus	Cost per stall (100 per cent EV Ready)		
		Townhouse	Mid Rise	High Rise
City of Richmond	New construction	\$307-\$2655	\$566-\$2448	\$760-\$3023
City of Kamloops	Retrofit		\$931 to \$1,551	
	New construction		>\$3,500	
Plug In BC Program Data	Retrofit only	Approx. \$4,000-\$8,000 (Includes cost of charger, which ranges from \$600-\$1400)		

Costs for EV readiness in new single-family homes will typically be significantly less than multi-family buildings, ranging from \$200-\$500, depending on the site configuration, calculated load, and panel sizing. Retrofit costs can range from \$500-\$1200, or beyond, depending on electrical needs in a home.

### Summary of Stakeholder Engagement:

The City facilitated public engagement on the Community EV & E-Bike Strategy from December 2020 – April 2021, which included public comment on EV readiness initiatives. After public engagement, from September through October 2021, staff collected feedback on the draft zoning bylaw from numerous stakeholder groups, predominantly represented by the development industry. City staff also engaged with FortisBC throughout 2021 on Kelowna’s power supply and electricity grid impacts of EV readiness.

Public comments were consistently supportive of improving access to home charging (Attachment 2). Feedback from development stakeholders varied, with most feedback expressing concern on construction costs and questioning the need for EV readiness at the levels proposed (the draft bylaw proposed 100 per cent EV readiness for multi-family buildings). FortisBC has provided a letter of support for the proposed requirements and suggests there are utility programs and policies in place that can mitigate concerns about their ability to supply additional electricity (Attachment 3).

Based on the feedback heard during the engagement, select changes were made to the proposed EV readiness policies including:

- Reducing EV readiness requirements in multi-family buildings from 100 per cent EV ready (every parking stall) to one EV ready stall per dwelling unit.

- Updating the proposed Zoning Bylaw to remove ambiguity around EV readiness for visitor stalls, which is not required at this time.
- Updating the proposed Zoning Bylaw to clarify that “load-sharing”, through use of EVEMS, will be permitted as a design strategy to reduce electrical load requirements and construction costs.

**Recommended Approach:**

In order to address current and future demand for EVs and to support achieving Kelowna’s emissions reduction targets, increased provision of EV charging access is required. As identified through literature review and public consultation, residential charging is the priority policy implementation area. The approach proposed for new residential development was based on balancing the following objectives (Table 2):

- **Minimize upfront costs for builders/developers:** EV charging infrastructure inevitably has a cost; however, Kelowna seeks to balance policies that minimize upfront costs while not pushing these costs onto EV owners/strata in the future.
- **Minimize costs for owners:** Installing EV charging at the time of construction for only a portion of parking or only installing conduit can make system expansion more costly overall.
- **Simple for stratas to administer:** It is difficult for stratas to fairly allocate access to EV charging among a limited number of stalls, and to allow owners to change stalls.
- **Equitable for residents:** Ensure residential charging is available in all residential buildings and locations.
- **Future-proofing:** Kelowna’s EV policies need to be technology neutral, anticipate trends, and accommodate specific charging systems and technologies as they change overtime.

Table 2: Evaluation of various electric vehicle requirement options\*

Policy Option Evaluated	Minimize upfront costs	Minimize retrofit costs	Simple for strata	Equitable for residents	Provides future proofing
Percentage Based Approach (20%)	Green	Red	Red	Red	Red
Conduit-only Approach	Green	Red	Red	Red	Yellow
EV ready, 1 stall per dwelling unit	Yellow	Green	Green	Green	Green
EV Charger Installed (all stalls)	Red	Yellow	Green	Green	Yellow

\* Green best meets the criterion; orange moderately meets the criterion; red does not meet the criterion.

Local governments across BC are adopting EV readiness policies to prepare their buildings for future charging needs. As illustrated in Attachment 4, many local governments in BC have already established similar EV readiness requirements to “future proof” newly constructed residential (single family and multi-family) buildings. These requirements mandate either 100 per cent EV readiness (i.e. 100 per cent of parking spaces with an energized electric vehicle outlet capable of Level 2 charging), or 1 EV ready outlet per dwelling, consistent with best practice guidance recommended by PluginBC’s “Residential Electric Vehicle Charging Guide for Local Governments”.

Based on the information provided, and policy evaluation conducted, staff recommends inclusion of the following residential EV readiness requirement, defined in Section 8 (Parking and Loading), through updates to the forthcoming Kelowna Zoning Bylaw (draft definitions and bylaw language are outlined in Attachment 1):

- All new residential developments have a minimum of 1 energized electric vehicle outlet per dwelling unit (capable of providing Level 2 charging)

#### **Conclusion:**

EV readiness requirements serve to “future-proof” newly constructed single-family and multi-family buildings, which are expected to last 50 or more years. Further, strong federal and provincial policy is targeting 26 per cent new EV sales in 2026 and 90 per cent by 2030. In anticipation of these trends, many BC jurisdictions have already implemented EV ready policies in recent years, demonstrating the technical and practical feasibility of EV ready initiatives (Attachment 4).

The absence of home charging will be a persistent barrier to increasing EV ownership in Kelowna and a lack of home charging will strongly hinder the City of Kelowna’s ability to reach its GHG emissions reduction targets. Kelowna’s preliminary modelling of current and anticipated policies confirm that a transition to light-duty EVs represents, by far, the most impactful GHG emissions reduction opportunity available from now through 2050. Based on anticipated federal, provincial, and municipal policies, transition to EVs represent 10 per cent of Kelowna’s preliminary modelled emissions reduction in 2030, and nearly 50 percent in 2050.

The legal complexity and high costs associated with multi-family EV charging retrofits suggest that retrofitting existing multi-family buildings – either individual stalls or whole building approaches - are likely to remain challenging into the future and could strongly deter EV ownership. Importantly, EV retrofit challenges in multi-family buildings will be amplified in the coming decades. Kelowna’s 2040 Official Community Plan (OCP) growth projections assume that 76 per cent of new units over the next 20 years will be in the form of multi-family housing. As EVs become more prevalent and Kelowna increases in density, EV charging availability will become an asset that is likely to increase desirability of all homes, with particular importance for multi-family housing types.

#### **Internal Circulation:**

Champion of the Environment  
Building Services  
Communications  
Development Engineering  
Development Planning  
Development Services  
Integrated Transportation  
Parking Services

#### **Considerations applicable to this report:**

##### ***Existing Policy:***

- OCP 2040
  - OCP Policy 12.1.1 - GHG Emissions Reduction Targets. In partnership with senior governments; local citizens and businesses; non-profits; external agencies; and utility providers; work towards reducing absolute community greenhouse gas emissions below 2007 levels by:
    - 4 per cent below 2007 levels by 2023;
    - 25 per cent below 2007 levels by 2033;
    - 80 per cent below 2007 levels by 2050.
  - Objective 12.7 – Support the transition to emerging low-emission transportation technologies
    - Policy 12.7.1 - Low Carbon Fuels. Support the expansion and use of low carbon fuels (e.g., electricity, hydrogen, etc.) as one way of reducing GHG emissions from the transportation sector.
    - Policy 12.7.2 - Electric Mobility. Provide infrastructure to support and expand electric vehicle (EV) and E-Bike ownership through the following initiatives:
      - Residential charging infrastructure: Ensure access to appropriate EV and e-bike charging infrastructure (such as Level 2 conduits for EVs), in new construction;
- Imagine Kelowna
  - Take action in the face of climate change
- Council Priorities
  - Greenhouse gas emissions are decreasing
- Community Electric Vehicle & E-Bike Strategy
  - Increase access to EV charging on private property
  - Implement EV Ready requirements for new residential developments

### External Agency/Public Comments

The City facilitated public engagement on its EV Strategy from December 2020 – April 2021, which included public comment on EV readiness initiatives. After public engagement, from September through October 2021, staff collected feedback on the draft zoning bylaw from numerous stakeholder groups, predominantly represented by architects and property developers. City staff also engaged with FortisBC on considerations for Kelowna’s power supply and electricity grid impacts.

A summary of stakeholder feedback is provided in Attachment 2. A letter of support for the proposed EV Readiness initiatives from FortisBC is provided in Attachment 3.

Submitted by:

T. Brunner, Community Energy Specialist

Approved for inclusion:



D. Noble-Brandt, Dept. Manager, Policy & Planning

cc:

Champion of the Environment

Community Engagement Supervisor  
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Attachments:

- Attachment 1: Draft Zoning Bylaw Updates for EV Readiness Requirements
- Attachment 2: Summary of Stakeholder Feedback
- Attachment 3: FortisBC EV Readiness Letter of Support
- Attachment 4: Residential EV Readiness Requirements in other BC Jurisdictions