# Report to Council

**Date:** September 27, 2021

**To:** Council

**From:** City Manager

**Subject:** Community Electric Vehicle & E-Bike Strategy

**Department:** Planning and Development Services

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**Recommendation:**

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.

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.

**Purpose:**

To present the Community Electric Vehicle and E-Bike Strategy to Council for information and endorsement.

**Background:**

Transportation accounts for the majority (53 per cent) of greenhouse gas (GHG) emissions in Kelowna (Figure 1), and most of these emissions (90 per cent) can be attributed to tailpipe emissions from light-duty vehicles. Therefore, light-duty transportation represents the largest area of opportunity for reducing GHG emissions in the community.

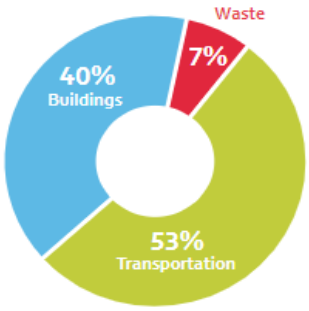


*Figure 1: Kelowna Emissions Profile*

The City of Kelowna (the City) is prioritizing getting people out of their automobiles through effective urban planning, active transportation (e.g., walking, biking), and public transit, but citizens will continue to rely on the automobile in some capacity for the foreseeable future. Currently, electric vehicles (EVs) are the only low-carbon vehicles at the point of market maturity, and as identified in the City's Community Climate Action Plan, they can significantly reduce GHG emissions.

In addition to EVs, other electrified modes of transportation such as electric bicycles (E-Bikes[1]) represent a promising opportunity to reduce transportation-related emissions. E-Bikes have strong potential to reduce reliance on automobile usage in Kelowna, due to their ease of use over longer distances and/or variable terrain, capacity to carry cargo, and favorable climate and cycling infrastructure in the city.

*EV and E-Bike Growth Trends*

British Columba leads Canadian provinces in Zero Emission Vehicle (ZEV)[2] registrations. Recent data indicates ZEVs, which are mostly composed of battery EVs and plug-in hybrid EVs, represent between 8-10 per cent of overall automobile sales (Figure 2)[3]. 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.

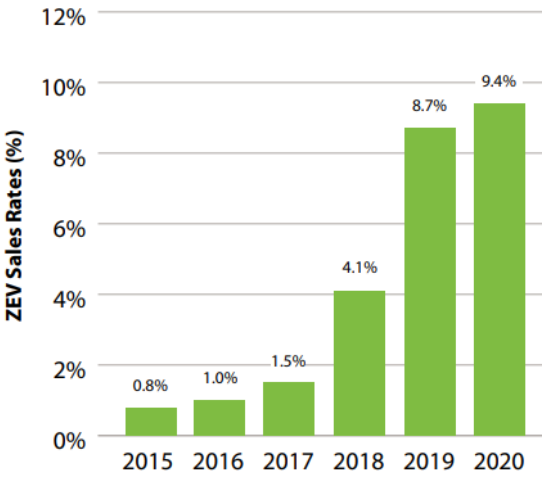


*Figure 2: BC Light-Duty ZEV Sales Rates*

Most transportation market analysts expect a continued upward trajectory in sales with falling costs of EVs, growing number of models, growing network of charging infrastructure and increasing consumer confidence in EV technology. The trend will continue to gain momentum as the federal government scales up requirements to ensure all new vehicles sold in Canada are zero-emission by 2035.[4]

While local, provincial, and national E-Bike sales data is not readily available, bicycle distributors are struggling to match supply with growing demand. In the United States, E-Bike sales increased by 85 per cent in March 2020 compared to 2019.[5] Locally, observations from the City's Integrated Transportation department indicate 8-10 per cent of current bike traffic across Kelowna's bike network is occurring on E-Bikes.

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[1] An E-Bike is defined as an electric bicycle with an electric motor of 500 watts or less and functioning pedals that are limited to a top speed of 32 km/h without pedaling.

[2] ZEV – defined in BC's ZEV Act as "a motor vehicle that (i) is propelled by electricity or hydrogen from an external source, and (ii) emits no greenhouse gases at least some of the time while the motor vehicle is being operated.

[3] CleanBC. 2020. Zero-Emission Vehicle Update. Retrieved from: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/2020_zero_emission_vehicle_update.pdf

[4] Building a green economy: Government of Canada to require 100% of car and passenger truck sales be zero-emission by 2035 in Canada. Retrieved from: https://www.canada.ca/en/transport-canada/news/2021/06/building-a-green-economy-government-of-canada-to-require-100-of-car-and-passenger-truck-sales-be-zero-emission-by-2035-in-canada.html

[5] Goldbaum, C. 2020. Thinking of Buying a Bike? Get ready for a very long wait. NY Times. Retrieved from: https://www.nytimes.com/2020/05/18/nyregion/bike-shortage-coronavirus.html.

Despite the multitude of benefits of EVs and E-Bikes, many consumers continue to buy diesel or gasoline vehicles. Some of the most common barriers to EV and E-Bike adoption, real or perceived, include:

- EVs:
  - Higher purchase cost than a traditional internal combustion engine (ICE) vehicle
  - Lack of charging options ("range anxiety")
  - Limited availability of desired vehicles class
  - Limited availability of desired make and model
  - Lack of familiarity with EVs
- E-Bikes:
  - Higher purchase cost than a regular bike
  - Lack of secure parking
  - Safety concerns
  - Limited availability

*Scope of the Strategy*

As local government's main role with EVs is to expand charging infrastructure, the Community Electric Vehicle and E-Bike Strategy (the Strategy; see Appendix A attached) focuses on supporting adoption of plug-in EVs only. Plug-in EVs include battery electric vehicles (BEVs), extended-range electric vehicles (EREVs), and plug-in hybrid electric vehicles (PHEVs).

In addition, E-Bikes are also included in the strategy due to their growing popularity and their potential to address several of the City's transportation priorities (i.e., reduce GHG emissions and promote active transportation). For many Kelowna residents, the first form of electric mobility they will own will be an E-Bike rather than an EV.

*Strategy Development Process*

Based on direction of the 2018 Community Climate Action Plan, the Strategy has been developed in accordance with Council direction through the following key milestones:


*Figure 3: Strategy development timeline*

**Summary of Public Engagement:**

City staff facilitated public engagement from December 2020 – April 2021. The process was designed to solicit diverse perspectives while also engaging organizations and individuals within the community that have direct knowledge or insights of barriers to EV and E-Bike adoption.

To achieve this objective, the City solicited the following input:

- Online survey – 223 responses (20 per cent EV drivers)
- Four focus groups (one each with large fleet operators, Non-EV owners, Local EV Drivers, and Residential and Strata Building Owners)

As outlined in The Public Engagement Summary Report (Appendix A of the Strategy), some of the key findings of the engagement included:

- The biggest challenge for non-EV owners is the high cost of purchasing an EV.
- Non-EV owners are hesitant to buy an EV due to, among other things: limited or no access to charging for longer trips, limited vehicle range, and limited or no access to charging at home.
- Current EV drivers want predictable charging experiences. This is likely why a large proportion of EV owners prefer to charge at home.
- Many non-EV owners live in either a multi-unit residential building (MURB) without charging facilities, or they only have access to on-street parking.
- About one third of non-EV owners plan to purchase a new vehicle within two years, and another third within two to five years. Almost all these vehicles will be replacement vehicles rather than additional ones. Many EV drivers charge at home and on average use public chargers once a month but. many would use Level 2 stations if there were more locations.
- Secure E-Bike locking and storage in MURBs and on the street is required to ensure E-Bikes are safe from theft in key locations.
- Across the board, the number one motivator for purchasing an EV, or considering a future purchase, is to reduce impact on the environment. The second motivator is cost savings.

**Key Recommended Actions from the Strategy:**

The full Strategy is provided in Appendix A, which provides EV/E-Bike objectives and targets, relevant background information (e.g., EV/E-Bike market trends, definition of EV types and charging infrastructure), and a detailed description of each recommended initiative. A summary of the initiatives can be found in the Strategy's Executive Summary and the Public Engagement Summary Report is provided as an Appendix to the Strategy.

To achieve the Strategy's vision: "*Kelowna is a city where charging an EV and riding an E-Bike is easy, convenient and affordable*," continued policy and program support from the City is required to ensure the community is prepared for EV and E-Bike market growth, and to support enhancement of existing policies to ensure EVs and E-Bikes contribute to Kelowna's GHG emissions reduction goals.

Local governments generally have six tools for action to support the transition to EVs: policy & regulation, infrastructure, partnerships, incentives, education & awareness, and advocacy to other levels of government. In consideration of these tools, the Strategy recommends 39 actions to achieve 5 objectives:

- Increase access to EV charging on private property (9 actions)
- Expand the public EV network (11 actions)

- Increase awareness and knowledge level of EVs, EV charging options, and E-Bikes among residents (6 actions)
- Support and accelerate fleet and shared mobility electrification (e.g., carshare, bikeshare, ride-hailing) (5 actions)
- Expand E-Bike infrastructure and improve E-Bike affordability (8 actions)

Eleven of the recommended actions are already in progress and/or are ongoing, including residential charging incentives for MURBs, Eco-pass parking permit program, and education about EVs and EV charging.

Staff recommend the implementation of three actions this fall/winter to coincide with the Zoning Bylaw update. These include:

- Implement EV Ready requirements for new residential developments (all residential archetypes including each parking stall for MURBs need to have the infrastructure installed to support Level 2 charging);
- Implement EV Ready requirements for new institutional, commercial, and industrial developments; and
- Require new gasoline service stations to have alternative fueling infrastructure.

Including these amendments as part of the forthcoming Zoning Bylaw update allows staff to maximize existing resources, eliminate duplication of work, and improve engagement.

**Conclusion:**

If Kelowna is to meet its climate change goals, reducing GHG emissions the transportation sector is paramount. While the priority is shifting people to more sustainable modes, passenger vehicles will remain a dominant transportation mode for at least the next twenty years. EVs can significantly reduce GHG emissions from the passenger vehicle sector in BC while providing many other benefits when compared to their gasoline and diesel-powered counterparts. Similarly, E-Bikes have grown in popularity and have the additional benefit of promoting active transportation. These benefits along with a supportive policy landscape in BC have resulted in exponential growth in the EV sales market; a trend that is expected to continue. Implementing the recommended actions of the Community EV and E-Bike Strategy will help meet GHG emissions reduction targets, reduce barriers to EV and E-Bike ownership, and support a growing consumer base.

**Internal Circulation:**

Building Services
Communications
Development Planning
Development Services
Infrastructure Operations
Integrated Transportation
Parking Services

**Existing Policy:**

- OCP 2030[6]
    - OCP Policy 6.2.1 - GHG Reduction Target and Actions. The City of Kelowna will, in partnership with senior governments; local residents and businesses; NGOs; external agencies; and utility providers, work towards reducing absolute community greenhouse gas emissions 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.
- OCP 2040
    - 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;
            - Commercial charging infrastructure: Require a percentage of parking spaces in commercial developments to have energized outlets for Level 2 EV charging and facilitate installing more charging stations in the future;
            - Public charging infrastructure: Strategically expand the availability of public EV charging infrastructure, prioritizing high-density neighbourhoods and high-traffic public areas; and
            - Education and awareness: Expand knowledge of EVs and their benefits through education and outreach initiatives.
- Our Kelowna as We Take Action: Kelowna's Community Climate Action Plan[7]
    - Action T6: Develop an electric vehicle strategy
- Regional Disruptive Mobility Strategy[8]
    - Create a community electric vehicle strategy
    - Transition government fleet to electric or other zero-emission vehicles
- Imagine Kelowna[9]
    - Take action in the face of climate change

[6] City of Kelowna. 2011. Kelowna 2030 – Official Community Plan: Chapter 6 – Environment. Retrieved from: https://www.kelowna.ca/our-community/planning-projects/official-community-plan.

[7] City of Kelowna. 2018. Our Kelowna as we take action: Kelowna's Community Climate Action Plan. Retrieved from: https://www.kelowna.ca/sites/files/1/docs/community/community_climate_action_plan_june_2018_final.pdf.

[8] Sustainable Transportation Partnership of the Central Okanagan. 2020. Regional Disruptive Mobility Strategy. Retrieved from: https://www.smarttrips.ca/sites/files/6/docs/related/regional_disruptive_mobility_strategy_-_final.pdf.

[9] City of Kelowna. 2018. Imagine Kelowna: The Visions to 2040. Retrieved from: https://www.kelowna.ca/sites/files/1/docs/related/imagine_kelowna_short_report_digital.pdf.

- Council Priorities[10]
    - Greenhouse gas emissions are decreasing

**Financial/Budgetary Considerations:**

The magnitude of potential costs to the City are outlined in the Strategy. Actual costs for individual actions will vary, based on the extent to which the City pursues each area. Annual City budget processes will be used to propose costs associated with each action area. City staff will seek to leverage external funding and grants where available.

The costs associated with engagement to implement the three actions to amend the Zoning Bylaw will be funded through existing budgets.

Submitted by:

C.Ray, Champion of the Environment

**Approved for inclusion:** D. Noble-Brandt, Dept. Manager, Policy & Planning

cc:
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Mobility Specialist
Parking Services Manager
Strategic Transportation Planning Manager
Sustainability Coordinator

Attachments:

- Community Electric Vehicle & E-Bike Strategy

[10] City of Kelowna. 2019. Council Priorities 2019-2022. Retrieved from: https://www.kelowna.ca/sites/files/1/docs/council_priorities_2019-2022_summary.pdf.