Community Electric Vehicle & E-Bike Strategy

PREPARED BY:
Policy & Planning
1435 Water Street
Kelowna, B.C. V1Y 1J4

City of Kelowna

Territory Acknowledgement

This Strategy was researched and developed in the beautiful Okanagan Valley of British Columbia, on the unceded, traditional territory of the syilx/Okanagan people.

Acknowledgements

The Community Electric Vehicle & E-Bike Strategy was guided by the City of Kelowna's Policy & Planning Department. The following City departments were consulted at various points throughout the Strategy development process:

- Strategic Transportation Planning
- Parking Services
- Building Services
- Development Planning
- Development Services
- Communications
- Infrastructure Operations

Kold Design completed the graphic design for the Strategy.

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The Community Energy Association (CEA) assisted with various components of the engagement process, including focus group facilitation, and generating key findings from the survey and focus groups.

The Strategy was guided by input received from key stakeholders as well as many local Kelowna residents and businesses. We look forward to continued collaboration as we work in partnership to implement the actions in the Strategy.

Contents

List of Abbreviations

AC	Alternating current
B.C.	British Columbia
BEV	Battery electric vehicle
CEVforBC	Clean Energy Vehicles for British Columbia
DC	Direct current
DCFC	Direct current fast charger
E-Bike	Electric bicycle
EREV	Extended range electric vehicle
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
FCV	(Hydrogen) fuel cell vehicle
GHG	Greenhouse gas
HEV	Hybrid electric vehicle
ICE	Internal combustion engine
km	Kilometre
km/h	Kilometres-per-hour
LED	Light emitting diode
MURB	Multi-Unit Residential Building
PCF	Pan-Canadian Framework on Clean Growth and Climate Change
PHEV	Plug-in hybrid electric vehicle
PST	Provincial Sales Tax
SUV	Sport utility vehicle
SUVI	Specialty Use Vehicle Incentive Program
TMP	Transportation Master Plan
V	Volt
ZEV	Zero-emission vehicle

Executive Summary

Transportation accounts for the majority (53 per cent) of greenhouse gas (GHG) emissions in Kelowna, with most coming from light-duty vehicle tailpipe emissions.

While the priority remains on getting people out of their automobiles through effective planning (i.e., trip distance reduction) and mode shifting to active transportation (e.g., walking, biking) and public transit, there is no doubt Kelowna residents will continue to rely on the automobile in some capacity for the foreseeable future. With that, the challenge then is to de-carbonize kilometres travelled by automobiles in the community by shifting away from fossil fuels (i.e., internal combustion engine) to those that emit zero or low amounts of GHG emissions.

Plug-in electric vehicles (EVs) and electric bicycles (E-Bikes) are two low-carbon transportation options that can make significant impact on GHG emissions reduction over the next decade. Therefore, this strategy provides poicy options to support and expand the growing light-duty EV and E-Bike markets.

City staff have been researching EV and E-Bike policy development and have engaged with key external stakeholders, the general public, and relevant City departments through a public survey and a series of focus groups. The engagement and a best practice review informed the overarching direction of the Community EV and E-Bike Strategy (the Strategy).

The Strategy is guided by the following vision and objectives:

VISION

Kelowna is a city where charging an EV and riding an E-Bike is easy, convenient, and affordable.

OBJECTIVES/PRIORITIES

- Increase access to EV charging on private property.
- Expand the public EV charging network.
- Increase awareness and knowledge level of EVs, EV charging options, and E-Bikes among residents.
- Support and accelerate fleet and shared mobility (e.g., carshare, bikeshare, ridesharing, ride-hailing) electrification.
- Expand E-Bike infrastructure and improve E-Bike affordability.

Each objective is supported by the following targets and actions:

TARGET	ACTION	TIMEFRAME
Objective: Increase access to EV charging on private property		
By 2023 100 per cent of parking stalls in all new residential developments will be EV Ready.	Implement EV Ready requirements for new residential developments (all residential archetypes including each parking stall for multi-unit residential buildings – MURBs – need to have the infrastructure installed to support Level 2 charging).	Short-term
	Develop an EV Readiness best practices guide for new MURBs.	Short-term
By 2023 at least 10 per cent of parking stalls in all new commercial developments will be EV Ready.	Implement EV Ready requirements for new institutional, commercial, and industrial developments.	Short-term
By 2023 all new service stations will have alternative fueling infrastructure.	Require new gasoline service stations to have alternative fueling infrastructure (e.g., DC Fast chargers or hydrogen fueling station).	Short-term
By 2030 all existing multi-unit residential buildings will have adequate EV charging infrastructure.	Offer residential EV charging incentives for MURBs.	In progress
	Investigate tax exemptions for EV Ready Affordable Housing.	Medium-term
	Educate strata council's and existing MURB residents on EV charging options.	Medium-term
	Educate residents and businesses about EV charging infrastructure.	In progress

TARGET	ACTION	TIMEFRAME
Objective: Expand the public EV charging network.		
By 2025, the majority of Kelowna EV drivers feel the public charging network is adequate in our Urban Centres (to be measured via survey). **By 2030,** the City expands the public charging network in accordance with the priority locations identified in the Public EV Infrastructure Gap Analysis.	Complete a public EV charging Infrastructure Gap Analysis.	Short-term
	Include EV Ready public parking in new City-owned facilities.	Short-term
	Expand the off-street Public Level 2 charging network.	In progress
	Partner to expand the Level 3 regional charging network.	In progress
	Explore curbside charging, including streetlamp charging.	Short-term
	Collaborate with other local and regional governments on a regional charging network strategy.	Medium-term
	Investigate a fee structure for City-owned/managed public chargers.	In progress
	Require on-street charging for major neighbourhood planning efforts (e.g., Official Community Plan amendments and rezonings, Area Redevelopment Plans).	Short / Medium-term
	Investigate options for utilizing public chargers to support MURB residents without access to at-home charging.	Short-term
	Explore using City-owned public chargers as EV educational sites.	Medium-term
	Work with community partners to increase the public's awareness of EV chargers through improved signage, marketing, and outreach.	In progress

TARGET	ACTION	TIMEFRAME
Objective: Increase awareness and knowledge level of EVs, EV charging options, and E-Bikes among residents		
New ZEV sales in Kelowna meet or exceed Federal and Provincial targets: **10 per cent** by 2025 (Provincial target) **30 per cent** 2030 (Provincial target) **100 per cent** by 2035 (Federal target)	Continue to offer and investigate options to revise the Eco-Pass parking permit program.	Short-term
	Partner to offer EV incentives and pilot projects (e.g., vouchers, instant rebates and EV carshare and E-Bike pilot projects) to reduce the barriers to EVs for low-income residents, visible minority groups and individuals with no or damaged credit.	Short-term
	Explore a bulk EV purchase program to benefit public EV adoption.	Medium / Long-term
	Promote the benefits of EVs/E-Bikes and available incentives.	In progress
	Partner to expand EV and E-Bike awareness through community outreach and events.	In progress
	Support federal and provincial electric mobility programs that are vital to ensuring EV and E-Bike uptake.	In progress
Objective: Support and accelerate fleet and shared mobility (e.g., carshare, bikeshare, ridesharing, ride-hailing) electrification.		
By 2025 all new light-duty fleet vehicle purchases will be ZEVs. **By 2030** all shared mobility trips in light duty vehicles will be in a ZEV.	Investigate opportunities to support carshare electrification (e.g., leverage the expansion of the public EV charging network to provide access for carshare operator's fleet.)	In progress
	Investigate opening public charging for EV fleets.	Medium-term
	Encourage taxi, carshare and ride-sourcing companies to utilize EVs in their fleets.	Medium-term
	Support EV knowledge sharing by facilitating a local EV Peer Network composed of large fleet operators.	Short-term
	Implement an E-Bike sharing program.	Short-term

TARGET	ACTION	TIMEFRAME
Objective: Expand E-Bike infrastructure and improve E-Bike affordability.		
By 2040, quadruple the number of trips made by bicycle.	Assess the feasibility of E-Bike charging requirements for new residential developments.	Short-term
	Update local regulations to be more permissive of E-Bikes (e.g., traffic and parks bylaws).	Short-term
	Implement cycling projects as per the Transportation Master Plan and Pedestrian and Bicycle Master Plan, and look for grant opportunities to expedite construction of cycling infrastructure.	In progress
	Pilot E-Bike public chargers at strategic locations.	Short / Medium-term
	Explore secure public storage options for E-Bikes.	Short / Medium-term
	Consider E-Bike incentives for certain demographics (e.g., low-income, seniors).	In progress
	Implement a model E-Bike Purchase Loan Program for businesses, piloted for City of Kelowna employees.	Short-term
	Explore a bulk E-Bike purchase program.	Medium / Long-term

City staff from Policy & Planning will work with various internal departments and external stakeholders to ensure the action plan is implemented. While EVs and E-Bikes are an important part of the shift to low-carbon transportation today, there is no doubt as other low-carbon mobility options gain mainstream acceptance, the City will need to respond through policy, programs and/or infrastructure (e.g., hydrogen fuel cell, e-scooters, biofuels, medium and heavy-duty vehicle electrification, different EV charging options). This Strategy is only a starting point for low-carbon mobility in Kelowna.

1

Introduction

Transportation accounts for the majority (**53 per cent**) of greenhouse gas (GHG) emissions in Kelowna, and **90 per cent** can be attributed to tailpipe emissions from light-duty vehicles.

The transportation sector represents the largest area of opportunity for reducing GHG emissions in Kelowna.

As displayed in Figure 1, in Kelowna, the priority remains on getting people out of their automobiles through effective planning (i.e., trip distance reduction) and mode shifting to active transportation (e.g., walking, biking) and public transit.[1] However, there is no doubt Kelowna residents will continue to rely on the automobile in some capacity for the foreseeable future. With that, the challenge then is to reduce GHG emissions from kilometres travelled by automobiles in the community by shifting away from fossil fuels (i.e., internal combustion engine) to those that emit zero or low amounts of GHG emissions. These systems include **electric vehicles (EVs),** hydrogen fuel-cell technology, and renewable fuels (e.g., biofuels).

Currently, EVs are the only low-carbon option at the point of market transformation that can make significant impact on GHG emissions reduction over the next decade. EVs also have other benefits relative to traditional gasoline and diesel vehicles that add to their rising value (e.g., lower operating/fuel costs, lower maintenance costs, reduced noise pollution, and improved air quality in urban centres).

Electric bicycles (E-Bikes) have also emerged as a popular low-carbon transportation option with multiple benefits: they reduce GHG emissions; support active transportation; reduce road congestion; and promote health and well-being. This option is also more affordable for people that want to switch to low-carbon transportation but cannot afford an EV.

Understanding the growth and popularity of EVs and E-Bikes, this Strategy outlines ways the City can support and accelerate these two low-carbon modes of transportation.

Figure 1: Kelowna's sustainable transportation hierarchy

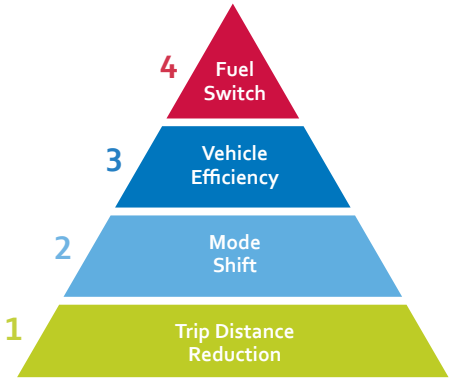
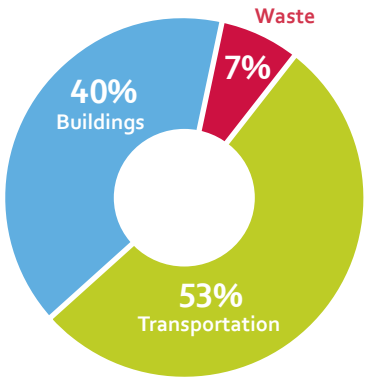


Figure 2: Kelowna's GHG emissions sources



1.1 Vision and Objectives

> The Strategy is guided by an overarching vision that **Kelowna is a city where charging an EV and riding an E-Bike is easy, convenient, and affordable.**

This Strategy supports this vision by exploring ways to remove barriers to EV and E-Bike ownership. The strategy has the following high-level objectives:

- Increase access to EV charging on private property.
- Expand the public EV charging network.
- Increase awareness and knowledge level of EVs, EV charging options, and E-Bikes among residents.
- Support and accelerate fleet and shared mobility (e.g., carshare, bikeshare, ridesharing, ride-hailing) electrification.
- Expand E-Bike infrastructure and improve E-Bike affordability.

Figure 3: Strategy organization

In Section 7 – Key Actions, each objective is supported by more detailed targets and actions.

1.2 Strategy Scope

With multiple low carbon or zero-emission vehicle (ZEV) options emerging, the City is monitoring market trends and will plan accordingly once new options become viable in the community. The focus of this Strategy, is on how the City can support and accelerate **light duty plug-in EVs** (i.e., personal vehicles, which include cars, vans, trucks, and SUVs, for personal and shared use) and E-Bikes, through the aforementioned five key objectives.

While the following opportunities are an important part of Kelowna's sustainable transportation system, they are out-of-scope for this Strategy:

- non-plug in EVs
- medium and heavy-duty commercial vehicles
- transit
- hydrogen fuel cell vehicles

The Strategy scope focuses on policy and program tools that are available to the City of Kelowna, and does not examine EV relevant policies that fall under provincial and federal jurisdiction, such as:

- carbon pricing
- electric vehicle sales mandates
- low carbon fuel standards
- vehicle emissions standards
- technology research and development

The City is concurrently pursuing opportunities to prioritize other means of sustainable transportation, including walking, cycling, the electrification of transit, and other opportunities to reduce personal vehicle usage through the Transportation Master Plan. A separate Corporate Green Fleet Strategy is also being developed for low-carbon options for the City's fleet.

2

Defining EVs, EV Charging, and E-Bikes

2.1 What is an EV?

Local government's main role with EVs is to expand charging infrastructure; therefore, this EV Strategy focuses on supporting adoption of plug-in EVs only.

As described in Table 1, plug-in EVs include battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). Other forms of EVs (e.g., conventional hybrid electric vehicles that do not plug-in or fuel-cell vehicles) can help reduce GHG emissions from the transportation sector, but they are not addressed in this Strategy because the limited role the City will play in their expansion over the next few years.

Table 1: Types of passenger vehicles

VEHICLE TYPE		DESCRIPTION	TAILPIPE EMISSIONS
Included in this Strategy			
	**Battery electric vehicle (BEV)**	A BEV relies completely on the electric battery and motor to propel the car. These vehicles store electricity onboard with battery packs and are powered by electricity from an external source by plugging into an outlet or charging station (e.g., Tesla Model 3, Chevy Bolt).	Zero
	**Plug-in hybrid electric vehicle (PHEV)**	PHEVs have a two-part drive system, and are equipped with an electrical drive and battery storage capacity, in addition to an internal combustion engine (generally with larger battery storage and a smaller engine than hybrid electric vehicles, described below). The batteries can be recharged by plugging into an electrical outlet, as well as via a gas-powered alternator and/or by regenerative braking (e.g., Mitsubishi Outlander, Toyota Prius Prime).	Partial
	**Extended range electric vehicle (EREV)**	These are a form of plug-in hybrid electric vehicle (PHEV), but the gas engine functions as a generator (alternator) to charge the battery rather than propelling the vehicle. Generally, EREVs will drive exclusively in electric mode until the battery is depleted; at that point, the gas generator will kick in to keep the battery charged until the car plugs in. (e.g., Chevy Volt, BMW i3)	Partial
Not included in this Strategy			
	**Hybrid electric vehicle (HEV)**	An HEV is a "traditional" or "conventional" hybrid and has a two-part drive system: a conventional fuel engine and an electric drive. These vehicles do not plug in; electrical energy is generated via an alternator or regenerative braking (e.g., Toyota Prius).	Partial
	**Hydrogen fuel cell vehicle (FCV)**	A FCV is an electric vehicle that uses a fuel cell instead of a battery to power its on-board electric motor. These vehicles are fueled with hydrogen. In this guide, FCVs are not included among EVs (e.g., Toyota Mirai).	Zero
	**Internal combustion engine (ICE)**	Your traditional engines, powered by burning gasoline, diesel, biofuels or even natural gas.	High

2.2 What Infrastructure is Needed for Electric Vehicles?

Currently, there are three commonly used types of charging infrastructure, or electric vehicle supply equipment (EVSE):

Table 2: Types of EV chargers[2]

120 V

AC Level 1

Speed: Slow (full charge a BEV in 8-20 hours)

Typical Applications: Home, workplace

208-240 V

AC Level 2

Speed: Medium (full charge a BEV in 4-6 hours)

Typical Applications: Home, workplace, public

208-600 V

DC Level 3 (Direct Current Fast Charger)

Speed: Fast (full charge a BEV in under an hour

Typical Applications: Public (especially near highways)

2.3 What is an E-Bike?

An E-Bike, or motor-assisted cycle, is a two- or three-wheeled cycle with a seat, pedals, and an electric motor.

- Maximum power output of **500 watts**
- Maximum operating speed of **32 km/h**
- Can be operated by pedaling or propelled by the electric motor
- Can be operated on roads or bicycle networks
- Riders are not required to have a driver's licence, vehicle registration, or insurance, but must wear a helmet
- In B.C., riders must be at least 16 years old to operate an E-Bike.[3]

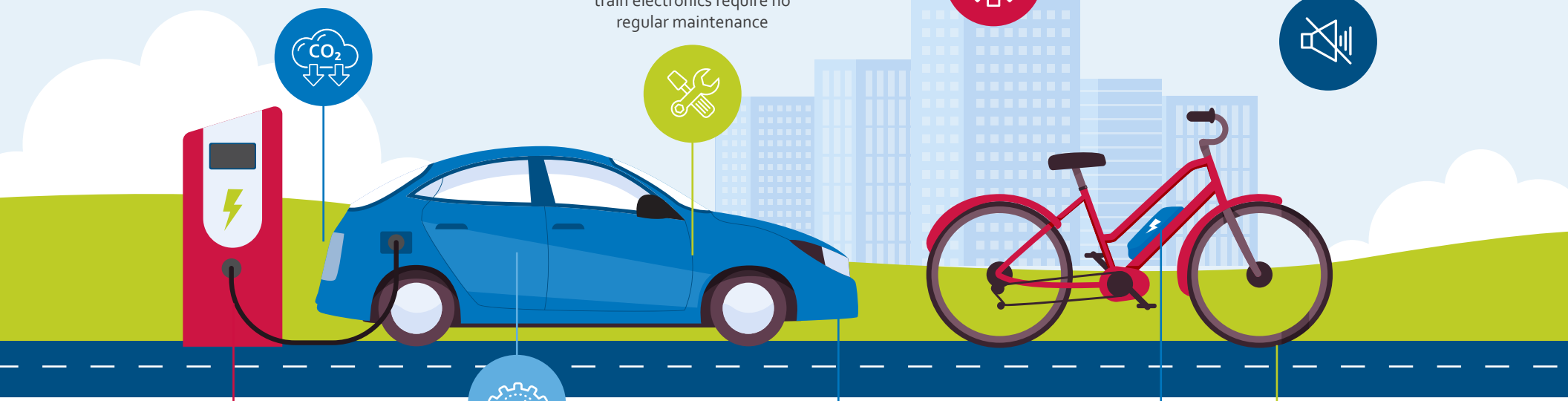
THREE CATEGORIES OF E-BIKES

1	**Pedal-assist (a.k.a. Pedelec)**	The rider controls the amount of power the drive system provides and the assist only kicks in when the rider pedals.
2	**Power-on demand**	The pedals and the motor are independent of each other. The motor is usually engaged with a throttle on the handlebars.
3	**Hybrid**	Combine aspects of both the pedal-assist and power-on demand bikes.

BATTERY RANGE
50 km to 160 km

COST
$1,000 to over $6,000

2.4 The Benefits of EVs and E-Bikes



Lower GHG Emissions
EVs substantially reduce GHG emissions by partially or completely eliminating tailpipe emissions

Less maintenance
EV motors, batteries and drive train electronics require no regular maintenance

Supports local economy
EV owners expenditures on power (primarily produced in-province) benefits local and regional economies

Less noise pollution
EVs produce little to no road noise

Lower fuel costs
In B.C., vehicle travel using electricity is currently less expensive than gasoline or diesel

More efficient
Electric motors **5X more efficient** than traditional engines

Grid integration and resilience
EV charging can occur during times of low electricity demand, which can help reduce grid peak demand

Battery recycling
Most EV's and E-Bikes come with lithium-ion batteries which are **90 per cent recyclable**

Safe and convenient
E-Bikes can cover greater distances in less time and avoid traffic by using footpaths and cycleways

3

Strategic Alignment

In July 2021, the Government of Canada committed Canada to a more aggressive 2030 GHG emissions reduction target, up to 40 to 45 per cent relative to 2005.

3.1 Federal Direction

The *Pan-Canadian Framework on Clean Growth and Climate Change* (PCF) outlines a federal emissions reduction target of 30 per cent below 2005 levels by 2030[4]. In its updated *Healthy Environment Healthy Economy Plan*,[5] the Government of Canada has committed to exceeding this 2030 target and putting Canada on a trajectory to net-zero GHG emissions by 2050.

Through PCF, the federal government highlighted the need to increase the number of zero-emission vehicles (ZEVs) on the road and shift from higher to lower emitting modes of transportation and investing in infrastructure. In June 2021, the federal government announced new mandatory targets for all new light-duty cars and passenger truck sales to be at zero-emission by 2035, accelerating Canada's previous goal of 100 per cent sales by 2040. These new targets continue to be coupled with existing measures to support increased ZEV adoption.[6] For example, through the Incentives for Zero Emission Vehicles (iZEV) Program, incentives are available to purchase or lease ZEVs,[7] and grants for EV charging infrastructure are offered periodically through the Zero-Emissions Vehicle Infrastructure Program (ZEVIP).[8] There are currently no direct federal policies or programs related to E-Bikes.

3.2 Provincial Direction

The 2018 *CleanBC Plan* sets a goal of reducing provincial GHG emissions and growing the low-carbon economy. It renews the Province's commitment to emissions reductions of 40 per cent by 2030, 60 per cent by 2040, and 80 per cent by 2050 (relative to 2007 levels).[9] In 2020, the Government of B.C. introduced an interim target of 16 per cent below 2007 levels by 2025.

With respect to transportation, the Province has indicated that it aims to have 100 per cent of light-duty vehicle sales be ZEVs by 2040. CleanBC outlines two key actions: bring down the price of clean vehicles and speed up the switch to cleaner fuels. There are several programs available in B.C. that encourage EV and E-Bike adoption. Relevant programs are listed in Table 3, along with a description of the key features of each program.

Table 3: Provincial EV and E-Bike Programs

PROGRAM NAME	DESCRIPTION
Clean Energy Vehicles for British Columbia (CEVforBC)[10]	$71 million for vehicle point-of-sale incentives and charging infrastructure. Rebate of $3,000 on the purchase of new battery electric vehicles, and $1,500 for plug-in hybrid vehicles.
BC SCRAP-IT Program[11]	Rebates of up to $6,000 for early retirement of older ICE vehicles that are replaced with BEVs ($3,000 for PHEVs). Note: at the time of writing this Strategy, the program for older ICE vehicles has not been renewed for 2022. There is also a rebate of $1,050 available for regular E-Bikes purchased by individuals and businesses when retiring an older ICE vehicle.
CleanBC Go Electric Public Charger Program[12]	Intended to increase the number of public Direct Current Fast Charger (DCFC) stations throughout B.C. The Program aims to fill current gaps in the public DCFC network in B.C. such as Indigenous communities, rural and northern areas, and city centers experiencing long queues for DCFCs due to high ZEV uptake.
EV Charger Rebate Program[13]	Rebates for at-home charging stations (up to $350), multi-unit residential buildings and workplaces (up to $2,000 per charger), EV ready infrastructure (50 per cent of the costs of the electrical work up to $600 per parking space), and EV ready plans to make at least one parking space per residential unit EV Ready (75 per cent up to $3,000).
Emotive Community Outreach Incentive Program[14]	Offers financial assistance to B.C. communities, organizations, and local governments to assist them in delivering local/regional EV awareness campaigns. The intent of the Program is to empower communities to deliver locally appropriate Emotive campaign activities that raise the awareness and profile of EVs.
CleanBC Go Electric Fleets[15]	Fleets can access rebates for ZEV readiness assessments, infrastructure assessments and upgrades as well as the purchase and installation of charging infrastructure to support the future of their fleets.
Specialty Use Vehicle Incentive (SUVI) Program[16]	Supports the adoption of ZEVs in a variety of applications including motorcycles, low-speed vehicles, electric cargo bicycles (cargo E-Bikes), utility vehicles, and a variety of medium- and heavy-duty vehicles, referred to as specialty-use vehicles.
E-Bike Provincial Sales Tax (PST) Exemption[17]	PST is not collected on qualifying E-Bikes (including cargo E-Bikes) and equipment used to convert a non-motorized bicycle into an E-Bike.

3.3 Kelowna Direction

Kelowna Policy Direction

The Community Electric Vehicle and E-Bike Strategy aligns with the following City plans and strategies:

- **2018 Community Climate Action Plan:** One of the Plan's key actions of is to develop a Community Electric Vehicle Strategy, which is estimated to represent a quarter of all the GHG emissions reduction between 2018-2023. The Plan assumes EVs will reduce annual gas/diesel consumption by 0.94 per cent annually once the Strategy is in place.[18]
- **2020 Regional Disruptive Mobility Strategy:** The strategy identifies electric mobility as one of the four distinct trends on the horizon. Several tactical actions local governments in the Central Okanagan can take to prepare for electric technology change in transportation are:
  - Create a community electric vehicle strategy
  - Transition government fleet to electric or other zero-emission vehicles.[19]

City Actions To-Date

- **Expanding public charging infrastructure:** At the time of writing, the City, in partnership with FortisBC, has installed six DCFCs (two in the Museum Lot, two at Rutland Centennial Park, and two at the Airport) and two Level 2 chargers (Museum Parking Lot and Airport) on City-owned land. This compliments the 30 public chargers on private property (e.g., hotels, shopping centres, automotive dealerships).
- **Eco-Pass program:** Kelowna is the only municipality in B.C. to offer a parking permit for EVs. This permit grants plug-in EV owners up to two hours per day of no-charge, on-street parking in paid parking areas. The permit is valid for a period of one-year and cannot be renewed. Since revising the program in 2016, over 490 EV drivers have accessed the incentive.
- **Education and awareness:** In 2020, the City, in partnership with the Regional District of Kootenay Boundary, received a grant from the Emotive Community Outreach Incentive Program to create a video showcasing how driving an EV is possible in Kelowna's winter conditions. The video centers on a local Kelowna family who own an EV and use it in the winter to live the Okanagan/Kootenay lifestyle. The video will be released in the Fall of 2021. A second grant was recently received to produce a second video focusing on the diversity of EV owners. The City also uses its marketing channels (e.g., social media, website, e-blasts) to create awareness of EV/E-Bike programs and incentives.
- **EV Charger Municipal Top Up:** Through the CleanBC – Go Electric EV Charger Rebate Program, the Province (in coordination with B.C. Hydro and FortisBC) offers a rebate of up to $2,000 per charger to purchase and install Level 2 networked EV chargers for apartments and condos. Recognizing that the availability of EV charging infrastructure in existing MURBs can be a major barrier to EV adoption, in 2021 the City began offering a municipal top up of $2,000 per EV charging installation to this rebate program, allowing Kelowna MURB applicants to receive up to $4,000 per charger.

The City, in partnership with FortisBC, has installed four DCFCs which has expanded public charging infrastructure

4

Promoting Inclusive Transportation

One of goals of Kelowna's Transportation Master Plan (TMP) is to promote inclusive transportation by ensuring the transportation network serves everyone, including people of all ages, incomes and abilities.

When thinking about equity, it is important to consider the mobility needs of all people, regardless of race, age, ability, gender, income, or sexual orientation. The TMP proposes improving pedestrian safety, transit, the all-ages and abilities bicycle network, and shared mobility options (e.g., ride-hailing) as these modes help to provide affordable and safe transportation options for people too young or old to drive or those who cannot afford the expense of owning a private vehicle. In addition, the TMP contains a proposed Accessibility Transition Plan which is intended to help implement the City's Community for All Action Plan objective of supporting accessibility and mobility for people with diverse abilities, such as those with limited vision, limited hearing, or people using wheeled mobility devices.

The equity goal extends to electric mobility, where affordability remains a major barrier for a large portion of the population. For EVs in particular, most models are still only accessible to higher income households, which means policy and investment in charging infrastructure only provides a direct benefit to these households. While EVs provide indirect community benefits such as better air quality and reduced noise pollution, the market for EV ownership still remains exclusive (price parity with conventional gasoline or diesel vehicles is expected in the next five years). However, current Federal and Provincial incentives for EVs have partially closed this gap, and as long as these incentives are available, many EV models are getting closer to price parity to their ICE counterparts.

Although E-Bikes have made biking possible for a wide range of ages and capabilities and are more affordable than EVs, they still carry a price premium relative to traditional bicycles. Incentives that reduce the purchase price of E-Bikes will make them accessible to more people.

While cost is the major barrier preventing widespread access to the electric mobility market, there are other equity considerations that can present barriers to uptake of EVs and E-Bikes:

- **Residential EV and E-Bike charging:** do residents of all housing types (e.g., single family home vs. MURBs) have access to charging?
- **Public EV charging:** are public chargers dispersed geographically in a way that benefits those who need it most? Can public charging at strategic locations support those who do not have charging access at home (i.e., garage orphans in apartment buildings)?
- **Active transportation infrastructure:** does the placement of additional active transportation infrastructure (bike lanes, corridors, bike locks and storage) ensure that all neighbourhoods can get to their destination easily and safely?
- **Parking and charging costs:** Are there other incentives (other than purchase rebates) that can be offered to reduce the operating costs of EV ownership?

This Strategy aims to address some of these considerations through various actions discussed in Chapter 7.

5

The Changing EV and E-Bike Market

Globally, it is projected that sales of EVs will outpace sales of diesel and gasoline powered vehicles by the mid-2030s.[20]

The market growth and environmental benefits for EVs is particularly strong in B.C. where close to 96 per cent of the electricity is generated from renewable energy.[21] Data from 2020 indicates ZEVs represent 8.4 per cent of overall automobile sales, which is 129 per cent high than 2018 (Figure 5).[22]

In Kelowna, EV ownership has increased nearly **200 per cent** between 2018 and 2020

Figure 4
Global EV and ICE share of long-term passenger vehicle sales

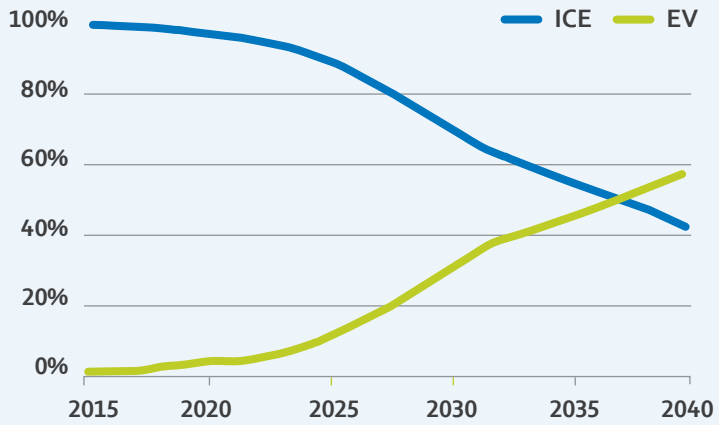
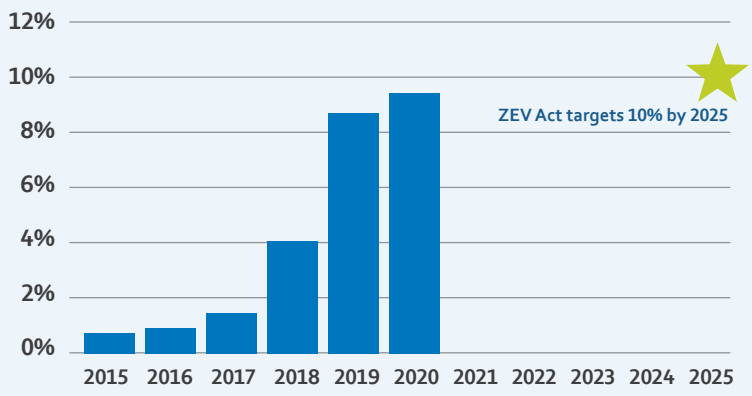


Figure 5
Light-Duty Vehicle ZEV Sales Rates in B.C.



In Kelowna the EV growth trend has been similar, with EVs increasing nearly 200 per cent between 2018 and 2020 as illustrated in Table 4. Compare this with just a 33 per cent increase in hybrid vehicles, or 0.1 per cent in passenger vehicles with an internal combustion engines over the same time period.[23]

Table 4: Vehicle registrations in Kelowna (2016-2020)

VEHICLE TYPE	2016	2017	2018	2019	2020
Passenger	73,000	73,000	74,000	75,000	74,000
Commercial	27,000	27,000	27,000	28,000	28,000
Hybrid	950	1,100	1,200	1,400	1,600
Electric	67	110	180	360	520
Motor Home	1,600	1,600	1,500	1,500	1,400
Motercylce/ Moped	4,600	4,600	4,700	4,500	4,600
Total	**106,017**	**106,210**	**111,380**	**111,760**	**112,120**

The growing popularity of EVs can be attributed to several factors:

- **The falling cost of EVs and EV battery packs:** The battery pack is the most expensive part of an electric vehicle. Consequently, the sticker prices of EVs fall with declining battery costs. Lithium-ion battery pack prices have fallen 89 per cent in real terms from 2010 to 2020 (1,191 USD/kWh to $137 USD/kWh). By 2023, the cost of Lithium-ion batteries is expected to fall to around $100 USD/kWh, the price point at which EVs are as cheap to make as gas-powered cars.[24]
- **A growing number of EV models:** In B.C., there are currently 48 EV models to choose from, and most major auto manufacturers are putting a greater emphasis on EVs.[25]
- **A growing network of supportive charging infrastructure:** Natural Resources Canada data shows there are 13,682 EV charging outlets at 6,115 public stations across the country. That's up 15 per cent from 2020. In B.C. there are 2,525 charging outlets at 1,092 EV charging stations.[26]
- **Supportive government policies:** The Federal Government has mandated targets for all new light-duty cars and passenger truck sales to be zero-emission by 2035.
- **Incentives:** In 2021, with the provincial CEVforBC Program, the BC SCRAP-IT Program, and the Federal Government's iZEV Program, residents of B.C. can get up to $14,000 off the purchase price of a qualifying BEV and $7,000 off the purchase price of a qualifying PHEV. B.C. residents can also get up to 50 per cent of the purchase and installation costs of Level 2 EV chargers covered. See Table 2 for a complete summary of provincial EV incentive programs.
- **More consumer confidence because of familiarity with EV technology:** it was not very long ago that EVs were a novelty, and consequently there were not many on the road. Now that EV technology has improved and EVs are commonplace, there is growing consumer confidence in the technology and less hesitancy purchasing one.

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.[27] The global E-Bike market was valued at $16.34 billion in 2017, and is expected to reach $23.83 billion by 2025.[28] 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.

6

Strategy Development

To help inform the Strategy, City staff researched EV and E-Bike policy development and engaged with key external stakeholders, the general public, and relevant City departments.

This Strategy was developed to address some of the main barriers to EV and E-Bike adoption identified through the engagement and best practices from other communities.

6.1 The Role of Local Government

While federal and provincial policy will continue to drive market growth for EVs and E-Bikes, local governments can accelerate adoption of these emerging low-carbon mobility options in various ways:

- Show corporate fleet leadership;
- Ensure access to charging on private property;
- Ensure a supportive network of public chargers; and/or
- Educate the public on the benefits of EVs and E-Bikes and create awareness of relevant initiatives.

Regarding charging infrastructure, the Province has clarified that local government electric vehicle supply equipment (EVSE) requirements are "out of scope" of the *Building Act*. The *Act* therefore does not appear to impede local governments' ability to implement requirements for electric vehicle charging infrastructure, as noted in the *Building Act* Guide.

6.2 Best Practice Research

The Strategy's actions, as outlined in Section 7, are informed by best practices from local governments across B.C., Canada, and the world. The City participates in the BC Electric Vehicle Local Government Peer Network, a working forum for sharing information and best practices, developing consistent and effective approaches to encouraging EV adoption, and regularly connects with local government representatives across the Okanagan regarding electric mobility.

6.3 Community Engagement – Methods

Survey

An online public survey launched through the City's Get Involved platform in November 2020 and was live for two months. The survey elicited 223 responses and sought to understand the perspectives of both EV-owners and non-EV owners. The survey focused on understanding barriers to EV adoption while also exploring opportunities to accelerate EV uptake in the city.

It should be noted that the results from open surveys such as this are a collection of opinions and perceptions from interested or potentially affected citizens and are not a statistically valid random sample, and therefore cannot be said to represent views of all Kelowna citizens.

Focus Groups

In addition to the public survey, local citizens and key stakeholders were invited to participate in four online focus groups held between December 2020 and February 2021 to help inform the Strategy. Participants were filtered into one of four focus groups on the following topics:

- Accelerating EV fleets
- The challenges of owning EVs for current EV owners (and barriers to purchasing an E-Bike)
- The barriers to EV/E-Bike adoption for those who do not currently own an EV/E-Bike
- The barriers to EV/E-Bike infrastructure in strata and rental buildings

Internal Engagement with City Staff

E-mobility affects various departments across the City. The following departments were consulted at various points throughout the Strategy development process:

- Strategic Transportation Planning
- Parking Services
- Building Services
- Development Planning
- Development Services
- Communications

Infrastructure Operations (including Fleet Services) are leading the development of a Green Fleet Strategy focused on shifting the City's corporate fleet to low-carbon technologies, including EVs. They were consulted regularly throughout the development of this Strategy to ensure alignment.

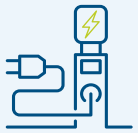
6.4 Community Engagement – Key Findings

SURVEY

The results of the survey identified the following key findings

Despite keen interest, by far the biggest challenge to EV adoption for non-EV owners was the high cost to purchase 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.

Non-EV owners similarly envision charging at home most often. However, many non-EV owners live in either a MURB without charging facilities, or they only have access to on-street parking.

About one third of non-EV owners surveyed plan to purchase a new vehicle within two years, and another one third within two to five years. Almost all these vehicles will be replacement vehicles rather than additional ones. BEVs and PHEVs were the most popular choices for new vehicle purchases.

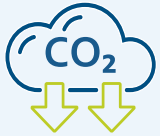
Focus Groups

The results of the focus groups identified the following key themes:

The majority of current EV drivers in the focus groups are charging at home and on average use public chargers once a month. Half the drivers felt there is no need for more public chargers for locals, but that public infrastructure would benefit tourists and those with regional commutes. Half of the drivers would use Level 2 stations if there were more locations. Current EV drivers also identified existing MURBs are a significant challenge, however.

Important EV charging station features are reliability, charging speed, proximity to regular routes and amenities within walking distance. Low or no fees for charging is important in early adoption phase, as well as consistent fee structures.

E-Bikes are gaining popularity in Kelowna for residents and visitors. Home and public charging are easily accessible, but security can be a major barrier. Secure E-Bike locking and storage in MURBs and on the street or at destinations is required to ensure E-Bikes are safe from theft in key locations. Riders want creative solutions and would consider paying for this peace of mind.



A mandate for carbon neutrality is the biggest motivator pushing companies and organizations to electrify.

Across all focus group participants, the number one motivator to have purchased an EV, or consider a future purchase, is to reduce impact on the environment. The second motivator is cost savings.

A complete summary of the EV public engagement process is provided in **Appendix A.**

7

Key Actions

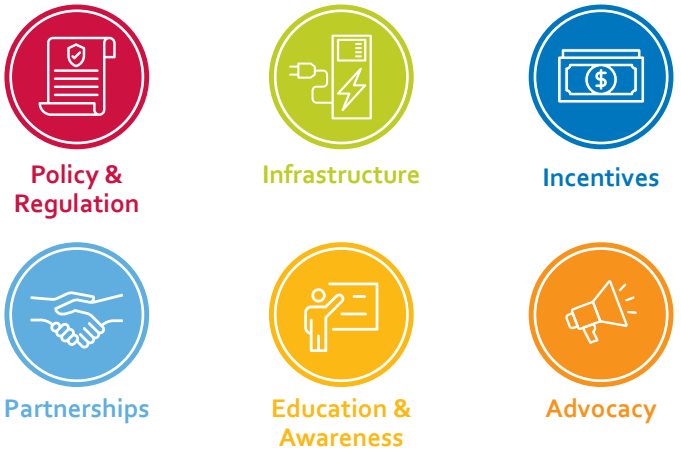
Bringing to life our vision that **Kelowna is a city where charging an EV and riding an E-Bike is easy, convenient, and affordable** involves a suite of actions rather than a silver bullet.

Building off best practice research and extensive interdepartmental and community engagement, the following sections of the Strategy outline the most impactful actions the City can take to address barriers to EV/E-Bike ownership and accelerate EV/E-Bike adoption in the community. The action plan is structured under the five key objectives:

- Increase access to **EV charging on private property.**
- Expand the **public EV charging** network.
- Increase **awareness and knowledge level of EVs, EV charging options, and E-Bikes** among residents.
- Support and **accelerate fleet and shared mobility** (e.g., carshare, bikeshare, ridesharing, ride-hailing) electrification.
- Expand **E-Bike infrastructure** and improve **E-Bike affordability.**

Each subsection builds off these objectives by outlining more detailed targets and a list of strategic actions. Each action includes: (1) what municipal tool for action is required; (2) the implementation timeframe considering available resources, level of effort, and level of impact; (3) the level of funding required; and (4) the lead department at the City.

Municipal Tools



Implementation Timeframe

In progress: Initiated and/or ongoing

Short-term: 0-2 years

Medium-term: 3-4 years

Long-term: 5+ years

Level of Funding Required

No to Low ($): Involves only staff time or total costs under $15,000

Moderate ($$): $15,000 to $100,000

High ($$$): $100,000+

7.1 EV Charging on Private Property

Through our community engagement process, we learned EV owners predominantly charge their EVs at-home, and access to home charging is an important factor influencing EV purchases. While access to at-home charging does not appear to be a barrier for occupants of low-density residential buildings (e.g., single family dwellings, duplexes, townhomes), residents of multi-unit residential buildings (apartments and condos) and renters can face significant barriers to accessing at-home charging, such as:

- Complicated approval/installation processes, especially if dealing with strata councils;
- Lack of control over dedicated parking; and/or
- High costs to retrofit existing infrastructure.

While current EV drivers indicate they do not use workplace charging very often, it is possible that could change if more workplaces provided charging options. EV charging at work can be an alternative to those who do not have access to charging at home and can help top-up those with longer commutes.

Actions from the City are centered on supporting access to home and workplace charging in new developments, supporting the retrofit of existing MURBs for EV charging, and making residential charging more affordable and accessible for all.

TARGETS

By 2023 100 per cent of parking stalls in all new residential developments will be EV Ready.

By 2023 at least 10 per cent of parking stalls in all new commercial developments will be EV Ready.

By 2023 all new service stations will have alternative fueling infrastructure.

By 2030 all existing multi-unit residential buildings will have adequate EV charging infrastructure.

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
Policy & Regulation	**Implement EV Ready requirements for new residential developments:** Update the Zoning Bylaw to require all parking stalls in new residential buildings (e.g., single-family dwellings, duplexes, fourplexes, townhomes, multi-unit residential buildings) to include an energized electrical outlet capable of minimum Level 2 charging.	Short-term	$	Policy & Planning Development Planning
	Implement EV Ready requirements for new institutional, commercial, and industrial developments: Update the Zoning Bylaw to require at least 10 per cent of parking stalls in new institutional, commercial, and industrial developments to include an energized outlet capable of minimum Level 2 charging.	Short-term	$	Policy & Planning Development Planning

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Policy & Regulation	**Require new gasoline service stations to have alternative fueling infrastructure:** Update the Zoning Bylaw with requirements that all new gasoline service stations city-wide must have alternative fueling infrastructure such as DC fast chargers or a hydrogen fueling station.	Short-term	$	Policy & Planning Development Planning
 Incentives	**Offer additional residential charging incentives for MURBs:** Recognizing that access to at-home charging is particularly challenging for MURB residents, continue to offer financial incentives for the installation of EV chargers in existing MURBs (e.g., municipal top-ups) in conjunction with senior government programs.	In progress	$$	Policy & Planning
	Investigate tax exemptions for EV Ready affordable housing: Investigate options for revitalization tax exemptions for existing affordable MURBs to incorporate EV Ready parking.	Medium-term	$	Policy & Planning
 Education & Awareness	**Develop an EV Readiness best practices guide for new residential buildings:** To support builders and developers in providing appropriate/ adequate EV charging infrastructure, develop a best practices guide for new residential buildings to support "EV-Readiness" policy shifts actions.	Short-term	$	Policy & Planning (engage an external consultant to lead)
	Educate strata council's and existing MURB residents on EV charging options: Recognizing that access to at-home charging is particularly challenging for MURB residents, develop a campaign for strata council's and MURB residents to inform them of charging options and resources/ support to incorporate EV charging options into their buildings.	Medium-term	$$	Policy & Planning (engage an external consultant to lead)
	Educate residents and businesses about EV charging infrastructure: Coordinate with FortisBC, the Province of BC, and EV industry experts to provide information and outreach to residents, businesses, employers, and property managers on strategies to install EV charging and available incentives. Investigate developing education sessions on EV charging requirements for builders, developers and trades.	In progress	$	Policy & Planning

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Advocacy	**Advocate for "Right to Charge" legislation:** Currently, EV owners in MURBs with strata corporations struggle to convince strata councils to install appropriate EV charging infrastructure. Advocate for "Right to Charge" legislation at the Provincial level to address this barrier by amending the *BC Strata Property Act* with language that requires strata councils and strata corporations to accommodate reasonable requests from residents for EV charging infrastructure.	Short-term	$	Policy & Planning

7.2 Public Charging

While at-home charging is the priority for EV drivers, a supporting public charging network is critical to addressing the fear that an EV may have insufficient range to reach its destination, and may be the predominant charging option for many EV drivers (e.g., those who do not have reliable access to charging at home or at work, those who want to 'top-up' their charge, for drivers taking longer trips, or for EV tourists). Focus group participants reiterated the value of public charging, recognizing the benefit for tourists and commuters, as well as residents without access to home charging. Further, fleet organizations are looking for collaborative solutions that will allow them guaranteed charging access without each organization installing a high number of charging stations on their own property. A mix of Level 2 and Level 3 DCFCs are needed to provide options for a range of vehicles and driver needs.

The City has an important role to play in public charging because it owns many of the assets that will be used to install public EV charging infrastructure (e.g., on-street parking, parkades, City owned parking lots, recreation centre parking lots, etc.).

TARGETS

By 2025, the majority of Kelowna EV drivers feel the public charging network is adequate in our Urban Centres (to be measured via survey).

By 2030, the City expands the public charging network in accordance with the priority locations identified in the Public EV Infrastructure Gap Analysis.

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
Policy & Regulation	**Investigate a fee structure for City-owned/managed public chargers:** Implement user fees for EV charging to support cost recovery of EV charging infrastructure and increase turnover. This needs to be considered alongside parking fees for stalls with EV charging infrastructure.	In progress	$	Parking Services
	Require on-street charging for major neighbourhood planning efforts: Require major Official Community Plan amendments and rezonings, Area Redevelopment Plans, and other neighborhood planning efforts to include plans for on-street EV charging infrastructure.	Short-term	$	Policy & Planning Development Planning
	Investigate options for reserving public charging infrastructure for MURB EV owners overnight at strategic locations: Understanding that many MURB occupants do not have access to EV charging in their own building (similarly, many [potential] EV drivers do not live in certain MURBs because there is no access to EV charging), investigate options to reserve public charging infrastructure for MURB owners in select high-density urban centres (e.g., downtown) to help overcome this barrier.	Short-term	$	Parking Services

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Education & Awareness	**Explore using City-owned public chargers as EV educational sites:** Public charging infrastructure is not just an operational asset but also a visual asset. The City can leverage these assets to display information related to EVs (e.g., display the benefits of EVs, maps of all public chargers in the City, showcase local EV 'heroes', etc.).	Medium-term	$$	Policy & Planning
	Public Awareness: Work with community partners to increase the public's awareness of EV chargers through improved signage, marketing, and outreach.	In progress	$$	Parking Services Policy & Planning
 Infrastructure	**Charging Infrastructure Gap Analysis:** Complete a public EV charging Infrastructure Gap Analysis to determine (1) where there are gaps in the current public EV charging network in Kelowna; and (2) to identify priority areas in the city for new charging stations. Prioritize EV chargers that serve low-income residences, including multi-family, single-family rental housing and 'garage orphans.'	Short-term	$$	Policy & Planning Parking Services Information Services (engage an external consultant to lead)
	Include EV Ready public parking in new facilities: Develop EV parking and charging infrastructure requirements in new City-owned parking facilities.	Short-term	$	Policy & Planning Parking Services Building Services
	Expand the off-street Public Level 2 charging network: Continue to use off-street City-owned parking lots (including recreation centres, arenas, and other City-owned facilities) and parkades to strategically expand the Level 2 charging network.	In progress	$$ - $$$ (depending on grants and ownership model)	Parking Services Policy & Planning
 Infrastructure  Partnerships	**Partner to expand the Level 3 regional charging network:** FortisBC has been actively expanding the Level 3 DCFC charging network in its regional electricity service territory over the past few years. These locations are particularly valuable to visiting EV owners who need a fast charge. Existing partnerships between FortisBC and the City have resulted in chargers at the airport, Rutland Centennial Park, and Museum parking lot. The City will explore additional partnership opportunities with FortisBC and other stakeholders to expand the fast charging network.	In progress	$$ - $$$ (depending on grants and ownership model)	Parking Services Policy & Planning

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Infrastructure	**Explore curbside charging:** Identify use cases (e.g., garage orphans, public parking) for curbside charging and determine if the City can utilize available electricity capacity from LED streetlamp conversion for EV charging. The City, in partnership with FortisBC, are currently investigating options for a pilot program to determine the effectiveness of curbside charging.	Short-term	$$$	Parking Services Policy & Planning Civic Operations
 Partnerships	**Collaborate with other local and regional governments on a regional charging network strategy:** Part of expanding EV adoption is creating a network of charging stations that facilitate both local and regional travel. While charging stations have been installed sporadically in communities across the Okanagan, working with other local governments on a regional charging network strategy will ensure regional EV travel is supported by a strategically planned public charging network.	Short / Medium-term	$	Policy & Planning Integrated Transportation

7.3 Promote Local EV Adoption

One of the primary barriers to EV adoption remains a lack of awareness of the options, technology, charging options, available incentives, and benefits. Focus group participants shared that Kelowna residents do not have a lot of exposure or access to test EVs and many people may avoid EVs because of the 'myths' surrounding them (e.g., do not function well in winter conditions, not enough charging options to get to destinations comfortably). While it is expected that awareness will increase as EV technology becomes more mainstream, local governments can help accelerate EV adoption through targeted education and outreach.

TARGETS

New ZEV sales in Kelowna meet or exceed Federal and Provincial targets:

10 per cent by 2025 (Provincial target)

30 per cent 2030 (Provincial target)

100 per cent by 2035 (Federal target)

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Incentives	**Continue to offer and investigate options to revise the Eco-Pass parking permit program:** This permit gives plug-in EV (PHEVs and BEVs) owners up to two hours per day of no-charge, on-street parking in Kelowna. The permit is currently valid for a period of one-year and cannot be renewed. Continue to offer the incentive but review the program every two years to assess whether EV ownership is mainstream. As the cost of EV ownership continues to decrease, consider restricting the Eco-Pass to demographics who will truly benefit from the incentive (e.g., low-/middle income households).	In progress	$$	Parking Services
	Partner to offer EV Incentives and Pilot Projects: Work with partners to develop programs and incentives (e.g., vouchers, instant rebates and EV carshare and E-Bike pilot projects) to reduce the barriers to EVs for low-income residents, visible minority groups and individuals with no or damaged credit.	Short-term	$$$	Policy & Planning

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Incentives	**Explore a bulk EV purchase program:** Investigate opportunities for a bulk purchase program where local dealerships provide discounts on EVs, potentially targeted at specific groups such as low-/middle-income households or small commercial fleets.	Medium / long-term	$$$	Policy & Planning
 Education & Awareness	**Promote the benefits of EVs/E-Bikes and available incentives:** Many residents still do not know the benefits and opportunities around EVs and E-Bikes. In addition, many of the recommended policies and programs will only be successful if there is widespread awareness throughout the community. The City can use its own marketing channels to distribute EV and E-Bike information to the public (e.g., social media, e-blasts, website).	In progress	$	Policy & Planning Communications
	Partner to expand EV and E-Bike awareness: Coordinate with EV and E-Bike ambassador programs such as Emotive Community Outreach Incentive Program and Plug'N Drive to develop programming and host 'ride and drive' events.	In progress	$	Policy & Planning Partnerships
 Advocacy	**Support Federal and Provincial electric mobility programs that are vital to ensuring EV uptake:** Continue to advocate for maintaining EV incentive programs until there is price parity with ICE vehicles. Incentives should be prioritized towards assisting those who likely cannot afford an EV. Also support aggressive and aligned ZEV mandates at the federal and provincial level.	In progress	$	Policy & Planning

7.4 Accelerating EV Fleets and Shared Mobility

Many local fleet organizations have begun to electrify, and it is expected that trend will continue as the business case for EVs extends beyond environmental motivations. Institutional fleets noted concerns with the lack of medium and heavy duty EV options; thus, as electric models of medium and heavy-duty vehicles become mainstream, it is expected more fleets will direct resources to electric buses and electric pick-up trucks.

Engagement with local fleet providers indicated access to fleet-specific, shared infrastructure is essential but it is costly and currently constraining EV expansion. Local fleet operators also revealed that they are looking for collaborative solutions that will allow them guaranteed charging access without each organization installing a high number of charging stations on their own property. Further, they noted that educational resources to help organizations develop strong business cases and procurement strategies could be beneficial to shifting to EVs.

TARGETS

By 2025 all new light-duty fleet vehicle purchases will be ZEVs.

By 2030 all shared mobility trips in light duty vehicles will be in a ZEV.

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
Policy & Regulation	**Investigate opportunities to support carshare electrification:** Currently the sole carshare operator in Kelowna, Modo, has a strategic priority to electrify its carsharing fleet, but access to adequate charging infrastructure remains a barrier. The City will investigate opportunities to leverage the expansion of the public EV charging network to provide access for carshare operator's fleet.	In progress	$$	Parking Services
	Implement an E-Bike sharing program: Offer permit(s) to private operators to deliver a short-term rental program for electric bikes. Through such a program, residents will be able to rent an E-Bike from a fleet available at a variety of public locations. E-Bike share, provides a cost effective, low-carbon, active transportation option for tourists and residents who do not own an E-Bike or other forms of active transportation.	Short-term	$$	Integrated Transportation

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Infrastructure	**Investigate opening public charging for EV fleets:** The City can address fleet charging concerns by looking for ways to strategically expand the public charging network in locations that would result in high usage by large fleet operations in non-peak public use hours. Further, the City will consider providing reduced parking fees for large fleet operators (e.g., car-shares, rentals, taxis) within certain hours of the day.	Medium-term	$$	Parking Services Policy & Planning
 Incentives	**Promote Private for Hire Vehicle Electrification:** Encourage taxi, car-share and ride-sourcing companies (such as Lucky To Go) to utilize EVs in their fleets. Explore incentives such as business licence discounts or rebates and access to public charging during certain hours.	Medium-term	$$	Policy & Planning
 Education & Awareness	**Facilitate an EV Fleet Peer Network:** Local fleet operators want to share resources to help organizations develop strong business cases and procurement strategies. To City can support EV knowledge sharing by facilitating a local EV Peer Network composed of large fleet operators.	Short-term	$	Policy & Planning Fleet Services

7.5 Electric Bicycles

The benefits of E-Bikes (e.g., GHG emissions reduction, support active transportation and reduced road congestion, and promoting health and well-being) make them a key part of shifting from a car-centric culture, especially as many E-Bike owners replace automobile trips. E-Bikes are no longer a novelty used exclusively for recreation; they are being used to commute to work, take kids to daycare, get groceries, and even for regional travel. Despite their benefits, some of the key barriers preventing E-Bike adoption include higher purchase cost than a regular bike, lack of secure parking, safety concerns, and limited retail availability because of their local popularity.

TARGETS

By 2040, quadruple the number of trips made by bicycle.

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Policy & Regulation	**Assess the feasibility of E-Bike charging requirements for new residential developments:** Investigate options in the Zoning Bylaw for incorporating electrical outlets capable of E-Bike charging for long-term bicycle parking in new multi-unit residential and commercial buildings.	Short-term	$	Policy & Planning Development Planning
	Update local regulations to be more permissive of E-Bikes: Local traffic and parks bylaws often unintentionally ban new modes by not explicitly mentioning them. Review local bylaws that govern active transportation facilities to ensure E-Bikes are included to broaden the potential and appeal for active and space-efficient transportation.	Short-term	$	Policy & Planning Parks & Buildings Planning Integrated transportation
 Infrastructure	**Implement cycling projects as per the Transportation Master Plan (TMP) and Pedestrian and Bicycle Master Plan (PBMP). Look for grant opportunities to expedite construction of cycling infrastructure:** Prioritize cycling infrastructure development, as indicated in the PBMP and draft TMP and seek grants to increase the annual level of investment to expedite the development of a safe and connected bicycle network. This investment will help reduce barriers to cycling and accommodate the greater potential use of bicycle infrastructure that E-Bikes enable (e.g., continue to pursue separation on busy shared pathways to accommodate higher volumes of E-Bikes expected in the future).	In progress	$$$	Integrated Transportation

CATEGORY	INITIATIVE	TIMEFRAME	COST TO CITY	LEAD DEPARTMENT(S)
 Infrastructure	**Pilot E-Bike public chargers at strategic locations:** Because many E-Bikes have removable batteries that can be recharged indoors, public charging infrastructure is less important for E-Bike adoption than for EVs. Pilot public E-Bike charging at strategic locations to support longer E-Bike trips and reduce range anxiety for those commuting over variable terrain.	Short / Medium-term	$	Real Estate Parks & Buildings Planning Policy & Planning
	Explore secure public storage options for E-Bikes: One of the main challenges with E-Bikes compared to regular bikes is owners' comfort with using public bike locks/storage because E-Bikes are typically a higher value. Explore public lock/storage options to help overcome this barrier.	Short / Medium-term	$$	Integrated Transportation
 Incentives	**Consider E-Bike incentives for certain demographics:** E-Bikes are still more expensive than most non-electric bicycles but allow users to travel further distances with minimal effort and are much cheaper than EVs. To help E-Bikes become more affordable for low-income and seniors, the City could consider offering a limited number of E-Bike financial rebates. Staff are currently investigating options for a pilot program for 2021/2022.	In progress	$$$	Policy & Planning
	Implement a model E-Bike Purchase Loan Program for businesses, piloted for City of Kelowna employees: To help promote low-carbon and active transportation amongst employees, the City could pilot an E-Bike/ bike Purchase Loan Program, that if successful, could be replicated by other employers in the community. Under the program, the City could loan City employees the full cost of a new E-Bike or regular bicycle, which would then be repaid through payroll deductions for up to 24-month period.	Short-term	$	Policy & Planning
	Explore a bulk E-Bike purchase program: Investigate opportunities for a bulk purchase program where local retailers provide discounts on E-Bikes, potentially targeted at specific groups such as low-/middle-income households.	Medium / long-term	$$	Policy & Planning

8

Moving Forward

The City of Kelowna's Community EV and E-Bike Strategy specifies the key actions the City can take to advance EV and E-Bike adoption in the community.

These actions are in line with the GHG emissions reduction goals of our Community Climate Action Plan and sustainable transportation goals of the regional Disruptive Mobility Strategy and draft TMP. While the Strategy outlines the various actions to achieve the various targets, real change will only result from implementing the recommended actions. Therefore, City staff from Policy & Planning will work with the various internal departments and external stakeholders to ensure the action plan is implemented.

A large focus of this Strategy is expanding public charging infrastructure. While the City's role in providing public EV charging infrastructure is critical in the short-term, it is expected private sector ownership of charging infrastructure will increase as the EV market grows. As the market expands, the business case for owning and operating EV charging stations will become stronger and more certain, allowing the transition to private sector ownership, and reducing the need for the City's support (see Figure 7).

While EVs and E-Bikes are an important part of the low-carbon transportation shift now, there is no doubt as other low-carbon mobility options gain mainstream acceptance, the City will need to respond through policy, programs and/or infrastructure (e.g., hydrogen fuel cell, e-scooters, biofuels, medium and heavy-duty vehicle electrification, different EV charging options). This Strategy is only a starting point for low-carbon mobility in Kelowna.

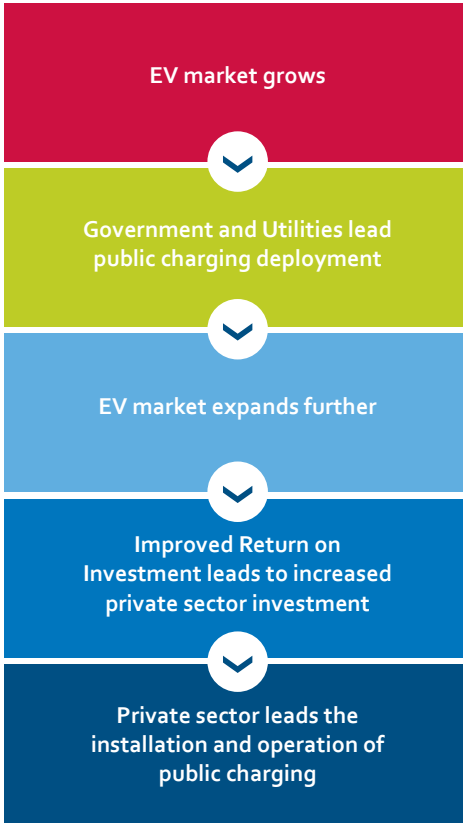


Figure 7: Evolution of roles in public charging deployment[24]

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Appendix A

CITY OF KELOWNA COMMUNITY ELECTRIC VEHICLE AND E-BIKE STRATEGY

PUBLIC ENGAGEMENT SUMMARY REPORT

City of Kelowna

TABLE OF CONTENTS

Cover photo credit: KootenayEVFamily

EXECUTIVE SUMMARY

In order to prepare a Community Electric Vehicle (EV) and E-Bike Strategy that reflects the specific challenges and opportunities of Kelowna residents, the City 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/E-bike adoption. This report details the methodology as well as findings.

Summary of Key Insights from the Online Survey

Despite keen interest, by far the biggest challenge for non-EV owners was the high cost to purchase an EV.

Aside from the high cost of EVs, 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.

Non-EV owners similarly envision charging at home most often. However, 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 1/3 of non-EV owners plan to purchase a new vehicle within 2 years, and another 1/3 within 2-5 years. Almost all of these vehicles will be replacement vehicles rather than additional ones.

If given the choice, 70% of respondents who currently do not own an EV would choose to buy an EV (battery electric vehicle or plug-in hybrid electric vehicle) for their next car.

Summary of Key Insights from the Focus Groups

The majority of current EV drivers in the focus groups are charging at home and on average use public chargers once a month. Many drivers felt there is no need for more public chargers for locals, but that public infrastructure would benefit tourists and commuters. Half of the drivers would use Level 2 stations if there were more locations. Existing MURBs are a significant challenge, however.

Important station features are reliability, charging speed, proximity to routes and amenities within walking distance. Low or no fees for charging is important in the early adoption phase, as well as consistent fee structures.

E-bikes and E-scooters are gaining popularity in Kelowna for residents and visitors. Home and public charging are accessible but security is a major barrier. Secure E-bike locking and storage in MURBs and on the street will ensure E-bikes are safe from theft in key locations. Riders want creative solutions and would consider paying for this peace of mind.

Across the board, the number one motivator to have purchased an EV, or consider a future purchase, is to reduce impact on the environment. The second major motivator is cost savings.

A mandate for carbon neutrality is the biggest motivator pushing companies and organizations to electrify their fleet.

BACKGROUND

The Province of BC passed the Zero-Emissions Vehicles Act on May 30, 2019, requiring that an increasing percentage of sales and leases of light duty passenger vehicles be electric – 10% by 2025, 30% by 2030 and 100% by 2040.

10% by 2025 | 30% by 2030 | 100% by 2040

The new ZEV regulation sets phased-in annual targets and other compliance requirements, ensuring automakers increase the number and type of EVs that they sell in B.C. to meet consumer demand.

Developing a Community Electric Vehicle (EV) and E-Bike Strategy to support transitioning to zero-emission vehicles (ZEVs) is one of the most impactful initiatives to reduce greenhouse gas (GHG) emissions in Kelowna, as presented in the 2018 Community Climate Action Plan (CCAP).

The City conducted several community engagement initiatives from December 2020 – April 2021 to help direct the development of the strategy. The overarching objective of the engagement program was to **understand local barriers to EV and E-bike adoption**.

To achieve this objective, the City solicited public input through:

An online survey

Focus groups

This document outlines the methodology and outcomes of both activities.

"EV" stands for electric vehicle and refers to light duty passenger cars like sedans, pick-up trucks, SUVs and vans that only have an electric motor. EVs are charged by plugging them into the electrical grid. Some EVs can be charged by the grid and also have a gas engine. Those are called "*plug-in hybrid electric*" or "PHEV".

COMMUNITY SURVEY - OVERVIEW

The overarching objective of the engagement program was to gather public input to understand local barriers to EV and E-bike adoption and to develop potential solutions to overcome the identified barriers.

The City posted the EV survey on the online engagement platform "Get Involved Kelowna" and used City channels to create awareness. This included social media, e-subscribe lists, a press release, website notice, and word of mouth. The survey was open from December 3, 2020 to February 1, 2021 and had 223 respondents. Citizens who completed the survey were offered the option to put their name into a prize draw for three $50 local gift cards.

The research questions guiding the survey are below. They targeted either those who already own an EV ("Current EV owners"), and those who do not ("Non-EV owners"). The City wanted to know:

What challenges do current EV owners experience in their daily EV usage in Kelowna, and what would help address these challenges?

What barriers are in place for non-EV owners that are preventing them from entering the EV market in Kelowna, and how could these barriers be overcome?

Survey live for **60** days

223 responses received

95% of respondents live within the City of Kelowna boundaries

20% of respondents own an EV

Survey questions covered the following topics:

EV Owners

- Demographic information
- Number & types of vehicles owned
- Motivating factors for purchasing EVs
- Charging habits
- Charging preferences

Non-EV Owners

- Demographic information
- Number & types of vehicles owned
- EV ownership challenges
- When people may become EV owners
- Why people do not own an EV

Introduction to EV Charging

"Level 1" Stop n' Sleep. Easy, trickle top up.

All EVs plug into a standard wall outlet. However, with just 120V, this is the slowest form of charging delivering a full charge in 17-25 hours. Even at this rate, Level 1 can be a convenient solution and may be sufficient for overnight charging for many people's shorter day-to-day driving.

"Level 2" = Stop n' shop. Slow and steady overnight or while you explore.

All EVs can plug into Level 2 chargers. They are the most common public charger and would be the type of charger you'd install at home. They require 240V, similar to your dryer, and deliver a full charge in 6 to 10 hours.

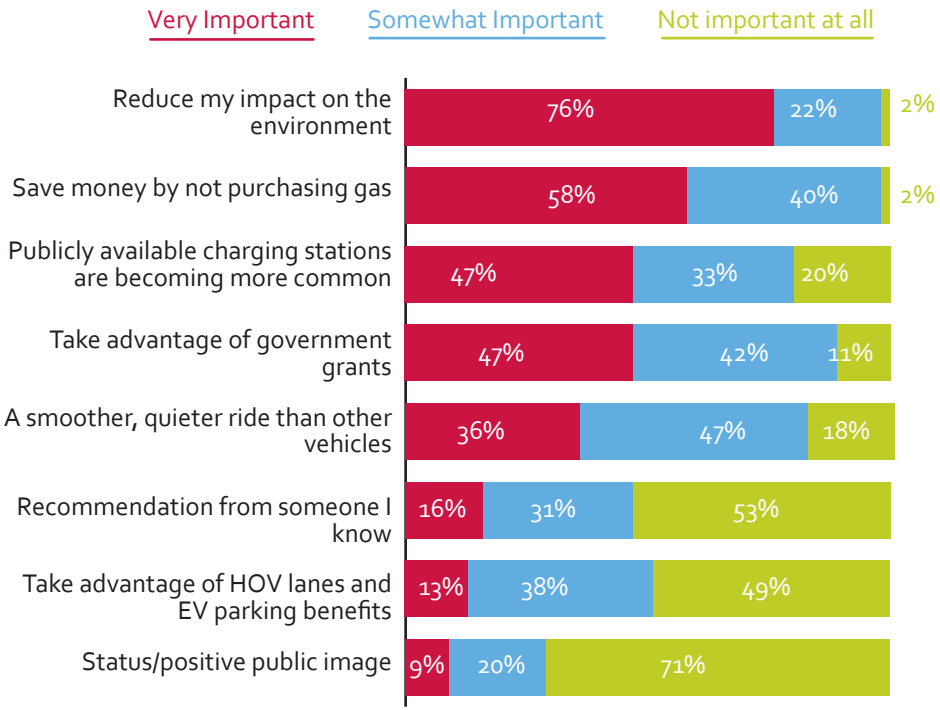
"DCFC" = direct current fast charger. Stop n' go. Quick and powerful to get on your way.

DCFCs are the quickest form of charging, delivering a full charge in less than an hour. They are found along major travel routes and at community gathering locations and are usually pay-per-use. A full charge is delivered in less than 1 hour.

COMMUNITY SURVEY - KEY FINDINGS

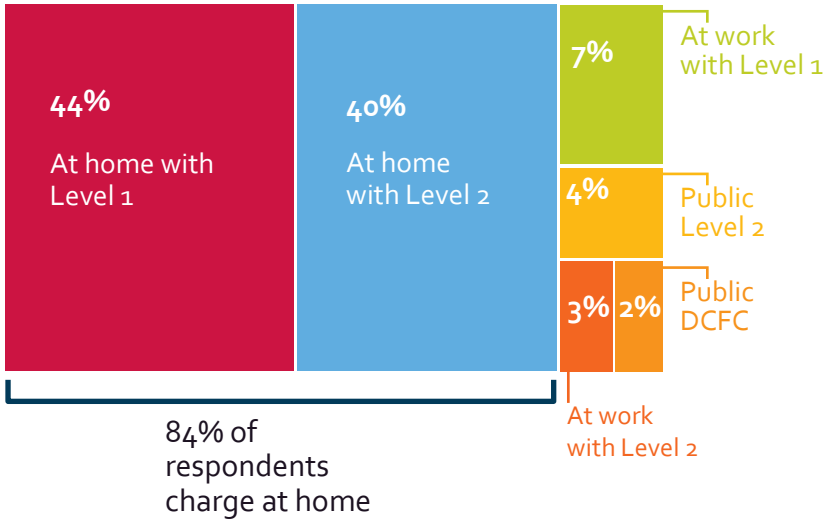
EV Owners - Motivations

What was your motivating factor for purchasing an EV?

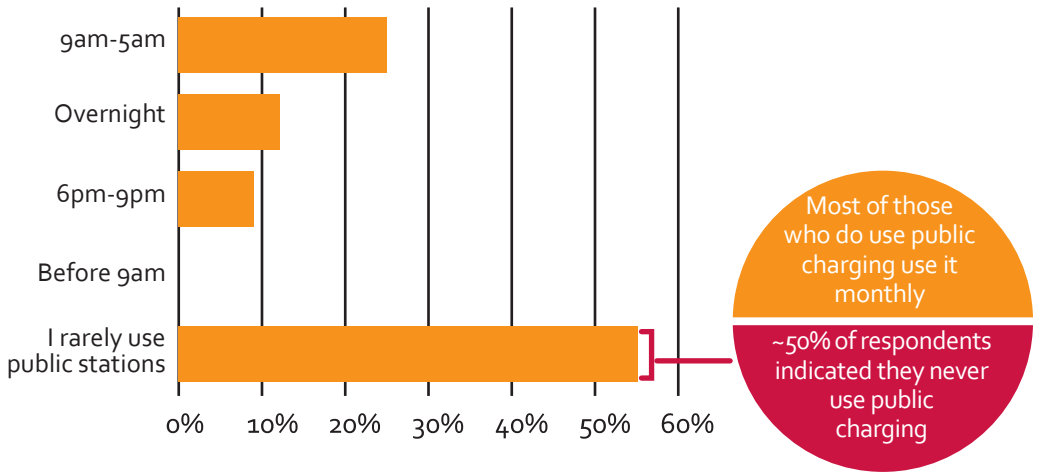


EV Owners - Charging Habits

Where do you charge [your EV]?



When do you use public charging stations?



COMMUNITY SURVEY - KEY FINDINGS

EV Owners - Charging Preferences

Top 3 charging needs and preferences (45 respondents, multiple answers

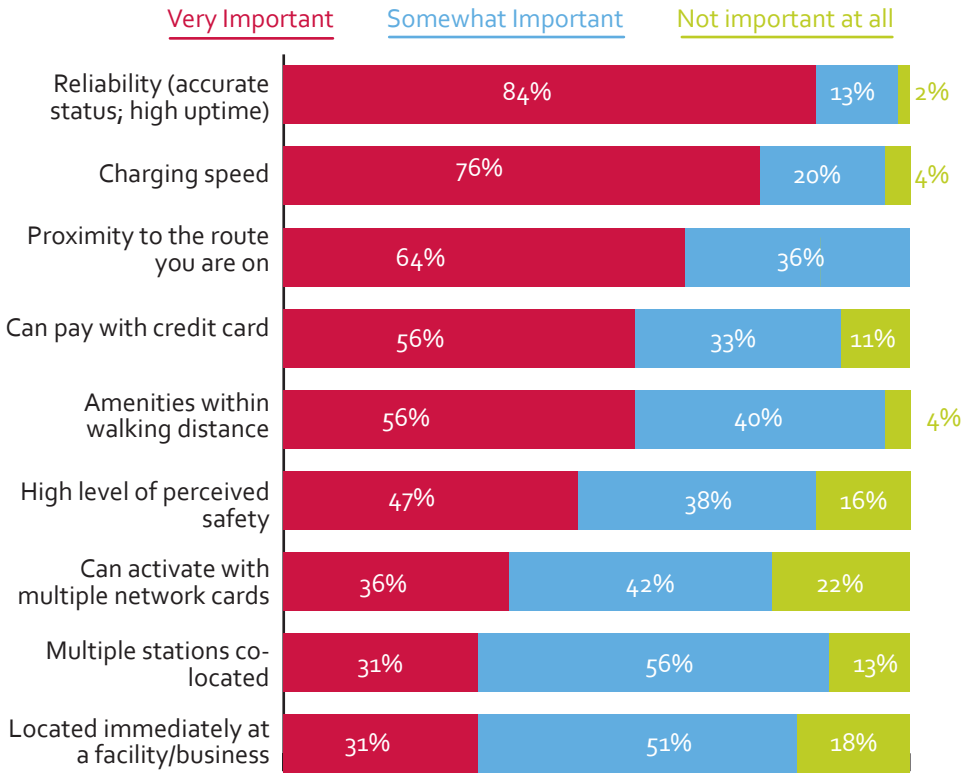
32	23	13
I charge opportunistically, when it is convenient to my trip/destination	*I would use public DCFC stations if there were more of them*	*I would use public Level 2 stations if there were more of them*

EV Owners - Ownership Challenges

Top 3 EV ownership challenges (45 respondents, multiple answers)

29	19	15
Limited or no access to charging for longer trips	*Charges take too long*	*Chargers usually unavailable or in use*

How important is [this feature] to an EV station?



INSIGHTS FROM THE SURVEY

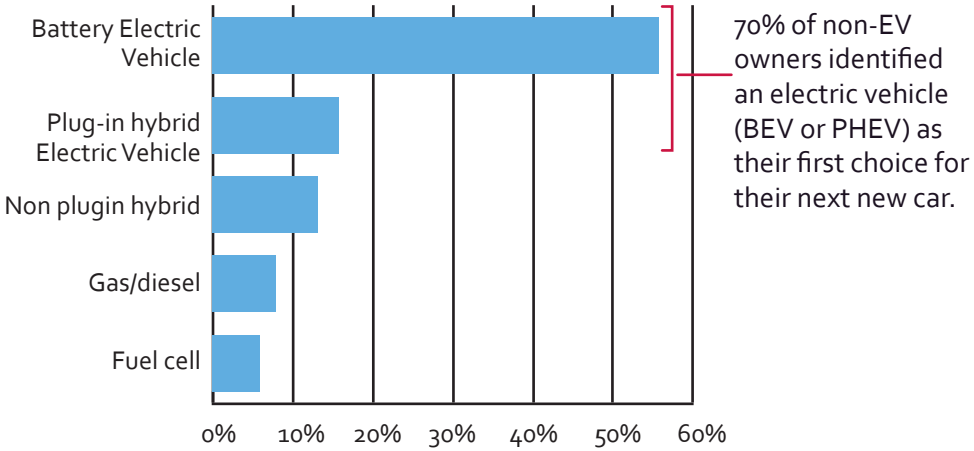
Current EV drivers want predictable charging experiences. This is likely why a large proportion of EV owners prefer to charge at home.

Non-EV owners similarly envision charging at home most often. Specifically, 80% of non-EV owners who responded to the survey believed they would primarily charge at home. However, among them, almost a quarter live in either a multi-unit residential building without charging facilities, or they only have access to on-street parking.

COMMUNITY SURVEY - KEY FINDINGS

Non- EV Owners

The next vehicle I would buy will be…

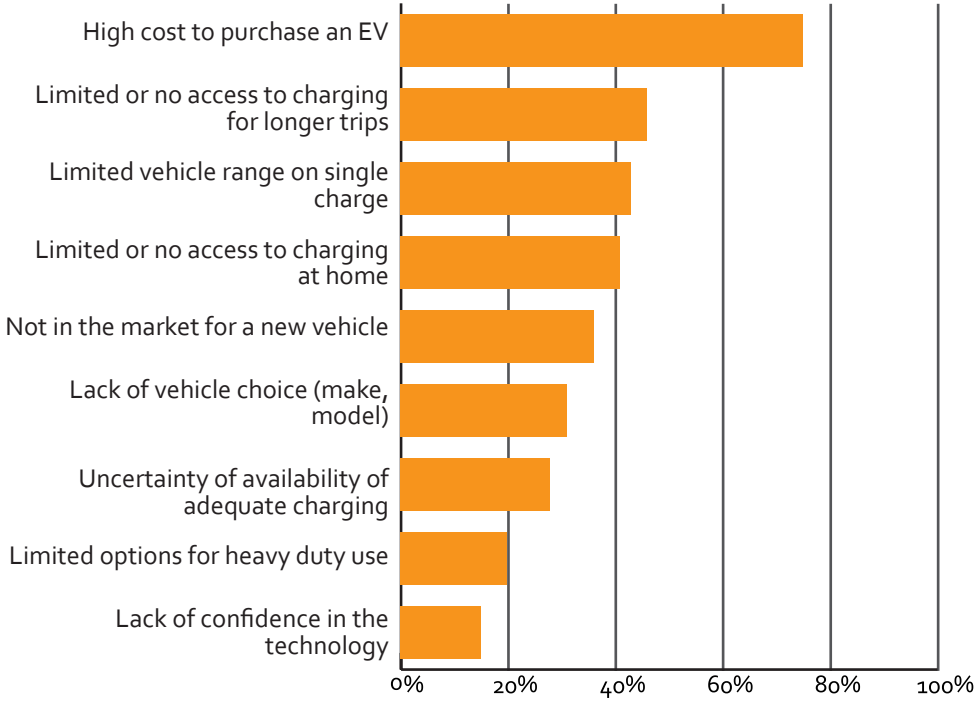


70% of non-EV owners identified an electric vehicle (BEV or PHEV) as their first choice for their next new car.

About 1/3 of non-EV owners (~60 of non-EV drivers) plan to purchase a new vehicle within 2 years, and another 1/3 within 2-5 years.

Almost all of these vehicles will be replacement vehicles rather than additional ones.

Why don't you own an EV?



At Home EV Charging

There are two charging options at home: use the equipment provided with the new vehicle, in a 120V outlet, or purchase a 240V charging station and have it installed by an electrician.

Most EV owners choose to install a 240V, Level 2, station because it's like having a gas station at home; you'll have a full battery every morning. In some cases, you can even just install a 240V outlet – check with a qualified electrician. Once plugged in, the EV charges on its own just like a cell phone - no monitoring needed.

Choosing a home charging station is not complicated, but there are still a few things to consider. The same goes for the installation. While it's a simple process, comparable to the installation of a stove socket, it must be done by professionals.

Learn more at PluginBC.ca

INSIGHTS FROM THE SURVEY

Despite keen interest, by far the biggest challenge for non-EV owners was the high cost to purchase an EV.

Other significant challenges (at least 40%) were: limited or no access to charging for longer trips, limited vehicle range, and limited or no access to charging at home.

FOCUS GROUPS - OVERVIEW

With support from the Community Energy Association (CEA), the City hosted four focus groups on EVs. The in-depth conversations would help the City shape the Community EV and E-Bike Strategy. Each two-hour, virtual session included breakout sessions to gain insight from a variety of perspectives such as EV owners vs. non-EV owners and home owners vs. renters. The City of Kelowna led the recruitment of focus group participants. This included public communications, direct stakeholder outreach and a notice in the community survey to apply. Each focus group was facilitated by CEA and attended by City staff.

The primary questions facilitators wanted to better understand were:

How can private industry and local government support EV/E-bike adoption?	*What role does public charging play in supporting EV/E-bike adoption?*	*How can education and awareness increase EV/E-bike adoption?*

FOCUS GROUPS SUMMARY

Large Fleet Operators

Participants: A variety of fleet organizations (e.g., light or heavy duty fleet; industry; public and private companies, taxi and car share co-ops)

19 attendees

Non-EV Drivers

Participants: Single family homeowners, multi-unit owners and renters who do not own an EV

20 attendees

Local EV Drivers

Participants: Single family homeowners, multi-unit owners and renters who do own an EV

20 attendees

Residential and Strata Building Owners

Participants: Representatives from rental buildings, including non-profit housing

6 attendees

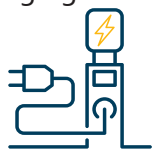
As noted previously, the primary objective of the engagement program was **to gather public input to understand local barriers to EV and E-bike adoption.**

Key findings from the survey and focus groups are summarized in this report and will help inform the proposed actions of the Community Electric Vehicle & E-Bike Strategy. There are three main areas of interest from the focus groups and within each of these, a number of key themes for EVs and E-bikes.

KEY THEMES

1 Charging EVs

- 1.1 Improving Access to Home Charging
- 1.2 Improving Access to Public Charging
- 1.3 Supporting Fleet Charging



2 Purchasing EVs

- 2.1 Encouraging Residents to Consider EVs
- 2.2 Leading by Example
- 2.3 Encouraging Fleet Transition

3 Partnerships

1.1 IMPROVING ACCESS TO HOME CHARGING

Focus group participants placed a strong emphasis on all residents having access to home charging. Almost all the EV driver participants lived in single-family homes and reported no barriers to home charging. In fact, these EV drivers only used public charger once a month, on average. For people living in multi-unit residential buildings (MURBs), access to shared or individual EV charging, E-scooter and E-bike charging, and secure parking are challenges the City can help address. There were concerns raised about the capacity of electrical panels, particularly at older homes, and the cost of service upgrades that would be required for the integration of Level 2 charging at home.

HOW MIGHT THE CITY ADDRESS BARRIERS TO HOME CHARGING?

- Require all new developments to be "EV ready", both commercial and residential. Pre-wiring for future EV charging, if not installing live stations, is a low-cost means of preparing for future users.
- Encourage/incent developers to provide secure E-bike storage with access to power in new developments, both commercial and residential.
- Support stratas to consider a "charging strategy" to support residents of existing MURBs.
- Consider public chargers that can be "reserved" overnight for overnight charging for "garage orphans" in typically vacant parking lots such as schools and churches.
- Work with FortisBC to provide a centralized source of information on home charging and service upgrade costs to provide people with trusted, one-stop-shop of what is required for home charging, permits and building requirements, how to deal with challenges of older homes/buildings/outdated electrical systems, and perhaps even an EV checklist and list of approved electrical contractors.

INSIGHTS FROM FOCUS GROUPS

The majority of current EV drivers in the focus groups are charging at home and on average use public chargers once a month. Half the drivers felt there is no need for more public chargers for locals, but that public charging infrastructure would benefit tourists and commuters. Half of the drivers would use Level 2 stations if there were more locations. Existing MURBs are a significant challenge, however.

1.2 IMPROVING ACCESS TO PUBLIC CHARGING

While EV drivers reported that they do the majority of their charging at home, overall the focus group participants recognized the benefit of public charging for tourists and commuters, as well as residents without access to home charging. A mix of Level 2 and Level 3 stations are needed to provide options for a range of vehicles and driver needs. Participants encouraged the City to focus on what people can do while they are charging when considering station locations. This was identified as an important element for tourism.

HOW MIGHT THE CITY ADDRESS BARRIERS TO PUBLIC CHARGING?

- Support charging stations at all major local amenities. For example, restaurants, theaters, malls, grocery stores, Costco, sports fields, CNC grounds, big parks, parkades, hotels, tourist and recreation destinations such as Okanagan Mountain Park, Knox Park, Mission Creek Greenway, Rail Trail and mountain bike trail heads, and outlying areas including Rutland, UBCO and the airport.
- Consider on-street chargers and retrofitting streetlights to provide additional options in higher density areas (e.g., for EV owners in MURBs that don't have access to charging – "garage orphan").
- Require all new gas stations to have EV chargers and encourage existing gas stations to install.
- Install secure E-bike/bike parking and charging with cameras and locks in public places. Consider charging a fee for this.
- Continue the shared E-bike and E-scooter pilot program.
- Lead regional collaboration to improve connectivity.

Important station features are reliability, charging speed, proximity to routes and amenities within walking distance. Low or no fees for charging is important in the early adoption phase, as well as consistent fee structures.

INSIGHTS FROM FOCUS GROUPS

E-bikes and E-scooters are gaining popularity in Kelowna for residents and visitors. Home and public charging are quite easily accessible but security is a major barrier. 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. Riders want creative solutions and would consider paying for this peace of mind.

1.3 SUPPORTING FLEET CHARGING

Focus group participants from fleet organizations are looking for collaborative solutions that will allow them guaranteed charging access without each organization installing a high number of charging stations on their own property. Fleet specific, shared infrastructure is essential but it is costly and currently constraining EV expansion. Many local fleet organizations have begun to electrify and identify that a procurement strategy and dedicated staff are two important considerations. Participants agreed that the process will be gradual and possibly involve hybrid vehicles during the transition. Institutional fleets, approximately half of the participants, noted concerns with the lack of medium and heavy duty EV options, directing resources to electric buses and eagerly awaiting electric pick-up trucks.

HOW MIGHT THE CITY ADDRESS BARRIERS TO FLEET CHARGING INFRASTRUCTURE?

- Partner with car-shares, rentals and taxi organizations to provide shared charging infrastructure
- Support fleet organizations to identify partners for capital and power sources
- Share resources to help organizations develop strong business cases and procurement strategies
- Coordinate charging hub concepts with FortisBC to align with electrical infrastructure needs

INSIGHTS FROM FOCUS GROUPS

CO_2

A mandate for carbon neutrality is the biggest motivator pushing companies and organizations to electrify.

2.1 ENCOURAGING RESIDENTS TO CONSIDER EVs & E-BIKES

Focus group participants shared that Kelowna residents do not have a lot of exposure or access to testing EVs or E-bikes. Further, there is a lack of centralized information for purchasing EVs and E-bikes and on home charging installation. They highlighted high purchase price and EV variety as key issues, along with "range anxiety", an underlying concern that an EV is not a reliable option to travel longer distances and charging stations are few and far between. That said, local EV drivers reported they typically drive less than 50 km per day and local weather, geography, and regional travel are not barriers to owning an EV.

Focus group respondents feel vehicle manufacturers are responding to consumer demand for less expensive EVs, higher range batteries and model variety, including light duty trucks in the near future. Participants noted a variety of experiences when trying to purchase an EV locally. Some had positive experiences while others were discouraged by unresponsive dealers or long wait lists.

HOW MIGHT THE CITY ADDRESS BARRIERS TO EV ADOPTION?

- Showcase "myth busting" materials with local examples to help reduce range anxiety and cold weather concerns.
- Support test drives for both EVs and E-bikes, in partnership with Modo Carshare or local EV fleets (e.g., taxis). Both are considered a "niche group" and the general public needs to be aware of the benefits, options, and how they work.
- Work with the tourism industry to provide EV and E-bike local information for newcomers to Kelowna.
- Consider offering incentives or rebates for EV and E-bike purchase.
- Consider "priority" parking for EVs as an incentive (e.g., at the front of parking lots).
- Engage with the Province of BC to identify mechanisms for regional considerations on how ZEV mandate targets* are satisfied.

*BC's ZEV Act "requires automakers to meet an escalating annual percentage of new light-duty ZEV sales and leases"[1]. The goal is to ensure there is enough supply to meet growing demand for EVs. However, manufacturers may likely satisfy their mandated volumes of EV sales in higher density centres like the lower mainland. This means regions like the interior of BC could face supply issues where residents can't find EVs to buy locally because EVs are sent to the bigger urban markets. A ZEV mandate that considers this unintended consequence would ensure manufactures are distributing EV equitably across the province.

[1] https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/clean-transportation-policies-programs/zero-emission-vehicles-act

2.2 LEADING BY EXAMPLE

Focus group participants advised that the City must lead by example through its own fleet electrification and strong marketing efforts to showcase this. Citizens need to know the City is "walking the walk" as well as supporting residents to consider EV adoption.

HOW MIGHT THE CITY LEAD BY EXAMPLE?

- Electrify the City fleet with branded materials.
- Convene a "community of practice" for local businesses, key stakeholders and fleet organizations to create a peer network.
- Collaborate with FortisBC and local educational institutions to produce City branded, researched, authoritative communication materials that raise public awareness of EVs and E-bikes.

2.3 ENCOURAGING FLEET TRANSITION

Focus group participants emphasized that trusting the technology is key for EV fleet conversion. Can an EV get the job done? EV fleets often cover large regions and organizations noted significant range anxiety. Further, many local fleets are composed of medium or heavy duty vehicles, in which there are currently limited to no EV options. Access to information, test drives and a procurement strategy goes a long way to support the key transition and expansion of EV fleets.

HOW MIGHT THE CITY ADDRESS BARRIERS TO FLEET ELECTRIFICATION?

- Advocate for flexibility to Provincial regulations, licensing structure and access to incentives that support electrification of taxi fleets.
- Support local fleet network meetings to ensure shared learning and procurement opportunities.
- Promote the Provincial SUVI (Special Use Vehicle Incentive) Program and other EV incentive programs.

INSIGHTS FROM FOCUS GROUPS

Across the board, the number one motivator to purchase an EV, or considering a future purchase, is to reduce impact on the environment.

The second motivator is cost savings. That helps to understand what messages might resonate most with Kelowna residents.

3 Partnerships

Focus group participants recognize the City cannot move the dial on the shift to EVs and E-bikes alone. Supporting more home and public charging stations, exploring secure E-bike storage options, raising public awareness, and leading by example will benefit from strong community partnerships.

HOW MIGHT THE CITY FOSTER AND STRENGTHEN PARTNERSHIPS TO INCREASE EV ADOPTION?

- Work with local and regional tourism organizations to promote an EV/E-bike friendly community.
- Encourage the local building industry to prepare for future market demand for EV charging infrastructure.
- Develop public and private partnerships to limit City investment on public EV charging infrastructure.
- Explore opportunities to collaborate with partner organization on grant funding such as NRCan's Zero Emission Vehicle Infrastructure Program (ZEVIP).
- Consider convening quarterly Kelowna EV network meetings to keep all industry partners appraised of new policy and implementation opportunities at the municipal and provincial level.
- Support EV engagement and education activities in the City.
- Work with the Provincial Emotive Campaign to identify opportunities for test drive events (and other ways to generate EV awareness).

NEXT STEPS

Overall, community engagement revealed strong support for immediate action and investment by the City to encourage EV and E-bike adoption.

The City of Kelowna will draft the Community Electric Vehicle & E-Bike Strategy based on the input and ideas presented by focus group participants, the results of the online survey, and other research and analysis conducted by City staff.

The strategy will focus on key tools that the City has to support EV and E-bike adoption such as:

- **Policy and regulations**
- **Infrastructure**
- **Education and awareness**
- **Partnerships**
- **Incentives and financing**
- **Advocacy**

The City would like to extend a thank you to those who took time to participate and contribute to this work. The next step is to prepare a draft strategy for Council consideration.