

Community E-bike Incentive Pilot Program

Feasibility Study

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March 2021



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Executive summary

This feasibility study evaluates the viability of the District of Saanich piloting an e-bike incentive program for the community as part of implementing the Saanich Climate Plan. It also includes a recommended pilot program design. It draws from the extensive work completed by researchers with the University of British Columbia's Department of Civil Engineering and School of Community and Regional Planning in modelling an e-bike program's impacts and developing program design recommendations (Aono & Bigazzi, 2019), (Bigazzi A. a., 2020), and (Bigazzi A. B., 2020).

The study finds considerable potential for e-bikes to contribute to the District of Saanich's climate action and active transportation mode share targets, and to deliver multiple co-benefits to the community.

Through engagement, the primary local barrier to e-bike adoption was found to be upfront cost (Watt Consulting Group, 2018). Diverse e-bike promotion programs locally and internationally were identified and reviewed for their potential to support e-bike adoption in Saanich, including evaluating local bike share pilots and international education and financial incentive programs. Analysis of programs that include equity measures was also conducted.

Economic models evaluating the impact of different incentive levels were used to design a program that reduces free-ridership and achieves cost-effective greenhouse gas (GHG) reductions.

The feasibility study recommends a pilot program which includes:

- Three tiers of incentives, based on household income, in order to improve equitable distribution of climate action funds;
- Minimum incentives of \$400 to reduce free-ridership and improve induced demand of the program;
- Rigorous academic study of program impacts on GHG emission reductions, trip substitution, vehicle shedding and household transportation costs, including surveys of pilot program participants and a control group;
- Target 300 participants in order to have enough data for the study; and
- Innovative "trial-an-ebike" events and discounts on bike safety skills courses.

The pilot would cost \$215,600 in expenses plus Saanich staff time and in-kind contributions from academic and community organization partners.

Direct GHG reductions from participants in the program are estimated to be between 1,000 and 2,000 tonnes of carbon dioxide equivalent (tCO₂e) through reducing vehicle kilometers travelled (VKTs) in internal combustion engines by 580,944 per year. Additionally, the e-bike pilot program is predicted to deliver social and economic benefits to our community, including increased physical activity levels for participants, improved transportation affordability, and economic activity greater than the incentive investment in the local clean energy economy, all for a competitive cost (estimated to be \$100-\$185 per tCO₂e of emissions saved). Of particular note, the annual savings from substituting one e-bike for one household motor vehicle pays for itself in months, and can save households several thousands of dollars per year on transportation thereafter. Those savings for mid-and low-income households could offer significant quality of life improvements.

This feasibility study demonstrates that a pilot e-bike incentive program, incorporating equity measures and robust academic evaluation of subsequent behaviour change, is an appropriate local government climate action, with the potential to achieve cost-effective GHG emission reductions and important community co-benefits.

1.0 Introduction

1.1 Context

In 2019, District of Saanich Council declared a Climate Emergency in response to decades of scientific research that demonstrates the need for urgent action to reduce global warming and adapt to a changing climate. In January 2020, Council approved the Climate Plan: 100% Renewable and Resilient Saanich. The Climate Plan outlines the actions needed to:

- Cut greenhouse gas (GHG) emissions in half by 2030 & net zero by 2050;
- Transition to 100% renewable energy by 2050; and
- Prepare for a changing climate.

Transportation is the largest source of our community-wide greenhouse gas (GHG) emissions, responsible for 57% of our total emissions in 2018. Majority of these emissions are from the use of personal vehicles, light trucks and SUVs, which could be reduced considerably by a mode shift to transit and active transportation.

In order to achieve adequate GHG emissions savings in the transportation sector, a modelled pathway scenario was included in the Climate Plan and shows we must achieve the following by 2030:

- 22% of trips by active transportation
- 14% of trips by public transit
- Transition 36% of personal vehicles to electric vehicles
- 100% of transit buses electrified

It should be noted that all sub-sector targets outlined above must be achieved to reach our community-wide GHG emissions reduction targets, meaning that action is required in all areas of mobility. As such, the Climate Plan identified 22 Mobility actions needed to achieve these targets and included the following as one of 7 actions focused on active transportation: *Climate Plan Action M1.2: Pilot an electric bicycle incentive program.*

1.2 Purpose

This document evaluates the feasibility of the District of Saanich piloting an e-bike incentive program for the community to deliver on Climate Action M1.2 and in order to support achieving a 22% active transportation mode share by 2030. It also makes recommendations on the design of such a pilot program.

It has been prepared by the District of Saanich, with input from the Community Social Planning Council, University of British Columbia's Department of Civil Engineering and School of Community and Regional Planning, interviews with other e-bike program providers and others. It has been informed by considerable engagement; local data analysis; review of best practices related to e-bike programs, incentives and other rebates; estimations of GHG reductions; and climate modelling conducted as part of the Saanich Climate Plan development. It draws from the extensive work completed by researchers with the University of British Columbia's Department of Civil Engineering and School of Community and Regional Planning in modelling an e-bike program's impacts and developing program design recommendations (Aono & Bigazzi, 2019), (Bigazzi A. a., 2020), and (Bigazzi A. B., 2020).

2.0 Value of an e-bike incentive program

Walking, cycling, wheeling, and other human-powered forms of transportation (often referred to as “active transportation”) are the most sustainable modes of transportation. They have no GHG emissions (except for the GHG emissions associated with constructing, maintaining and disposing of the bike, for example, or the related infrastructure such as roads and sidewalks, etc.) and they also support health, safety, equity, community building and local businesses.

E-bikes are part of active transportation. Although there are some small GHG emissions associated with their operation (from the electricity used to charge their batteries, which in BC is 97% renewable), e-bikes otherwise have all the benefits of active transportation and can make cycling possible for more people and more trips.

2.1 Benefits of e-bikes

The District of Saanich has temperate weather year-round, is expanding active transportation infrastructure, and has trip patterns that appear conducive to growth in e-bike adoption as a substitute for motor vehicle trips (see Appendix 1: E-bike baseline data).

Preliminary studies have found e-bikes are used for longer trips than conventional bicycles, with an average distance per trip of 6.1km (Aono & Bigazzi, 2019). That distance is longer than both the average bike trip distance (3.3km) and the average car trip length (5.3km) in Saanich as found in the CRD’s Origin-Destination survey (Malatest, 2017) and shown in Table 1 below.

Table 1: Average trip length by mode in Saanich

Mode	Average Trip Length
Car	5.3 km
Transit	4.8 km
Bike	3.3 km
Walking	1.0 km

Source: 2017 CRD Trip Diary for Saanich

This trip distance boost compared to non-electric bikes means e-bikes may be able to replace more car trips than cycling alone.

Additionally, anecdotal evidence indicates that electric bicycles overcome many barriers to non-electric cycling, including:

- ease of covering hilly terrain;
- ease of transporting young children;
- ease of transporting heavy goods such as groceries;
- less physical fitness required – making cycling available to more people of diverse ages and abilities; and

What is an E-bike?

The BC Motor Vehicle Act [Motor Assisted Cycle Regulation](#) defines, in part, an e-bike as having an electric motor with power ratings below 500 watts, no more than 3 wheels, and not capable of propelling the cycle faster than 32 km/hr. on level ground.

[According to ICBC](#), to operate an e-bike, or motor-assisted vehicle a person must be 16yrs or older and wear a bicycle helmet. A drivers licence, registration, or insurance are not required.

While it has a motor, an e-bike is not considered a vehicle. Unlike limited speed motorcycles (mopeds and scooters), e-bikes do not require a license and may be used on bike lanes and multi-use trails. Therefore, we consider these human-electric “hybrids” as a form of Active Transportation.

- less need for exercise clothes – increasing convenience of cycling for different types of trips.

E-bikes overcome many barriers to electric vehicle adoption, including:

- lower purchase costs;
- lower operating costs;
- lower barriers to charging (any electrical outlet can be used, rather than the specialized charging typically used for electric vehicles); and
- improved opportunities for of regular moderate exercise, with resulting physical and mental health benefits.

E-bikes deliver more environmental and community benefits than electric vehicles do, including:

- improved road safety (e-bikes have slower speeds and less mass than electric vehicles);
- less pollution from tire particulates;
- less wear and tear on roads; and
- reduced footprint required for parking.

A meta-analysis of 24 published studies on e-bike usage (Bigazzi A. a., 2020) found that e-bike users substitute many different kinds of trips with e-bikes, including walking, non-electric cycling, public transit, and driving personal vehicles. This analysis shows that e-bikes are not only used for recreation or to make existing cycling trips easier, but can also displace driving and the associated greenhouse gas emissions from internal combustion engines.

2.2 Barriers to e-bike adoption

E-bikes are not a one-to-one replacement of personal vehicles. They require bike riding skills and confidence, are less comfortable in inclement weather, do not allow for carpooling except for transporting young children, do not have the same capacity to transport large loads or to travel for long distances outside of the region in a timely manner, are more easily stolen, and require covered overnight parking. E-bike users will likely require supplemental use of a personal vehicle, transit, car-sharing, taxis, and/or other ride-hailing services from time to time.

A survey of local residents (Watt Consulting Group, 2018) found the following perceived barriers to e-bike adoption:

- upfront costs (37%)
- threat of theft (27%)
- safety concerns (22%)
- lack of public places to charge (20%)
- lack of places to park an e-bike (15%)
- lack of private places to charge an e-bike (15%)

E-bikes are more costly to purchase than conventional bicycles. As detailed in Appendix 1, an online review of e-bikes available for sale locally showed that excluding cargo e-bikes, the average e-bike purchase cost was \$3,260. Cargo bikes averaged \$5,807 in price. In addition, the cost to maintain an e-bike is also higher, including the need to purchase a new battery after 4-6 years of use. In comparison, e-bikes are much less expensive than owning and operating a motor vehicle, and therefore may provide affordability benefits depending on overall household transportation choices (see Appendix 1 for cost comparisons of different modes).

Upfront costs can be addressed through financial incentives or through promotions and experiences that reduce the unwillingness to invest in new technology (See Appendices 2, 3, and 4 for best practices and options analysis).

The Saanich police department is developing a bike registry system to address bike theft, and education on appropriate locks and locking techniques may also be useful. Implementing the Saanich Active Transportation Plan addresses many infrastructure barriers such as safety and parking.

Charging concerns can be addressed mainly through education, as e-bikes have generous ranges, can be pedaled if they are low battery, and can be charged at any outlet – no special fast chargers are required.

2.3 Need for an e-bike incentive program

There are multiple actions being undertaken that will help support the uptake of e-bikes in Saanich, including:

- implementation of the Active Transportation Plan and associated AAA (All Ages and Abilities) bike network;
- planning for compact and completed communities where density is focused on nodes and corridors;
- increasing awareness of e-bikes through a communications campaign;
- supporting a pilot to lower speed limits on residential streets; and
- reviewing and updating the Zoning Bylaw to consider amendments to support e-bike parking.

However, these do not address the top barrier identified through engagement: upfront costs. Incentives are a common approach to encourage adoption of climate-friendly technologies at the municipal, provincial, and federal levels that do address this barrier. Appendix 2 includes analysis of the e-bike incentive programs currently available to residents in Saanich. While there is an e-bike incentive through the SCRAP-IT program in BC and private financing available for e-bikes, these have limited uptake due to such restrictions as the need to scrap a qualifying vehicle, and/or to increase debt load and debt payments. As such, there is a gap related to incentives that support e-bike adoption. Similarly, Saanich recently hosted a private bike share pilot in the community, which was discontinued at the end of the pilot due to several issues including lack of uptake, complaints about how bikes were stored, and high levels of theft and vandalism of bikes. This local experience with a bike share program (see Appendix 2 for details) reveals that a bike share program would be unlikely to achieve the scale of GHG emission reductions and other co-benefits in our community that an incentive program supporting private ownership of e-bikes would achieve.

A municipal incentive pilot program is needed to address current gaps. If implemented as a pilot, the program could be analyzed to determine the impact of incentives on e-bike adoption, actual GHG savings and co-benefits and help inform a more comprehensive e-bike incentive program at either the municipal or provincial level.

3.0 Engagement

Engagement has been conducted with the community at large and with industry, and is in process with low income Saanich residents.

A community survey of over 700 respondents conducted for the Capital Regional District, of which Saanich is a member municipality, identified barriers to e-bike adoption in the community (Watt Consulting Group, 2018). Community support for an E-bike Incentive Pilot Program has been found through the extensive public engagement conducted for the Saanich Climate Plan (see www.saanich.ca/climateplan for details) and the [Saanich E-mobility Strategy](#).

Two rounds of engagement with local e-bike vendors have been completed as part of the feasibility study and E-bike Incentive Pilot Program design process. Engagement showed support for the concept of a municipal incentive program for e-bikes and support for many program aspects, with some concerns about allowing online sales and the extra administrative burdens of a point of sale incentive, but nonetheless interest in participating in the program.

Further engagement with lower income members of our community is in development to understand the level of interest in e-bikes as a transportation option and program design considerations to improve accessibility for low income residents. A draft survey is being reviewed by residents with lived experience of poverty, organized through our community partner, the Community Social Planning Council. The survey will then be distributed to members of the Saanich L.I.F.E. program, an income-qualified recreation access program.

More information about engagement can be found in Appendix 6.

4.0 Vision, goals & targets

The vision, goals and targets for the E-bike Incentive Pilot Program were informed by overall community climate targets, alignment with our community's vision and the guiding principles of the Climate Plan. They were developed through review of academic literature, lessons learned in other jurisdictions, and local engagement.

4.1 Vision

Through the Saanich Community E-bike Incentive Pilot Program, a growing number of people in Saanich use e-bikes to replace fossil fuel vehicle trips, experience health and economic benefits from doing so, and share their experiences to help understand the role e-bikes can play in climate action.

4.2 Goals

1. Provide a simple to use incentive program with high participant satisfaction ratings
2. Provide a program that is accessed by households across the income spectrum in Saanich
3. Reduce greenhouse gas emissions in personal transportation
4. Increase physical activity levels of participants during transportation activities
5. Reduce household transportation costs
6. Collect high quality data from participants to enable rigorous evaluation of program impact, including:
 - a. Trip substitution
 - b. Vehicle shedding
 - c. Household transportation cost impacts
7. Support the local clean economy and employment
8. Increase community awareness of the value of e-bikes to accelerate wider community adoption.

4.3 Targets

Key targets and indicators for the pilot are listed in Table 2. These have been designed to monitor and report on progress for achieving the Goals and Vision outlined above.

Table 2: E-Bike Incentive Pilot Program Targets

Theme	Target	Rationale	Measured by
Number of e-bike incentives distributed	300	To achieve an adequate number of survey responses to effectively evaluate the pilot	Incentives issued
Number of participants who complete the survey	At least 100	To collect sufficient data on behavior/GHG impact of the program to be statistically valid	UBC survey: Number of unique individuals who complete the full 3 rounds of surveys
Percentage of funds for income-qualified households (median and below)	At least 50%	Supports Saanich Climate Plan guiding principles of ensuring benefits of climate action are shared equitably	Funds issued to income-qualified households

Theme	Target	Rationale	Measured by
Reduction in territorial GHG emissions from transportation by participants	Average of 50% reduction per participant after 12 months	Matches Saanich Climate Plan 2030 target to cut GHG emissions in half of baseline	UBC survey: mode substitution and distance travelled
Reduction in vehicle ownership rates among participants.	Reduced rates of vehicle ownership among participants after 12 months of e-bike ownership	Supports Saanich Climate Plan and EcoCity Footprint reports' "lighter living" strategies and recommendations	UBC survey: vehicle ownership
Increased active mode share	Shifting 50% of previous passive transportation to e-bike active transportation after 12 months	Matches Saanich Climate Plan 2030 target to cut GHG emissions in half of baseline (assumes few/no EV/ZEVs among participants)	UBC survey: trip substitution
Increased affordability	Decrease in estimated household transportation costs by 12 months after e-bike adoption	Supports Saanich Climate Plan's principle of improving well-being and designing climate actions to achieve multiple benefits	UBC survey: trip substitution, vehicle ownership, reported e-bike maintenance costs
Support for local clean transportation industry	80% of incentives are for e-bikes purchased locally	Supports Saanich Climate Plan principle of improving wellbeing, including economic and employment opportunities	Number of incentives issued for e-bikes purchased locally vs. online
Increase community awareness of e-bikes	Number of people participants report speaking to about e-bikes	Supports Saanich Climate Plan pathway of increasing active transportation mode share	UBC survey

5.0 Incentive program option analysis

Robust review and analysis of relevant programs and design options was conducted to determine the most appropriate approach for Saanich's Community E-bike Incentive Pilot program, as described in the following appendices:

- Appendix 2 contains a review of existing local, national, and international e-bike programs, including rebates, financing, bike share, bike trial, multi-modal, and combination programs.
- Appendix 3 contains a review of relevant programs that centre equity or provide income-qualifying tiered offers.
- Appendix 4 provides a detailed analysis of pros and cons for the varied incentive program types outlined above and their appropriateness for a municipal pilot program in Saanich.
- Appendix 5 reviews options, makes recommendations, and provides rationale for the proposed Community E-bike Incentive Pilot Program design details.

The rationale for recommending a rebate program approach is summarized in Table 3. It was determined that the most appropriate approach for Saanich would be a rebate program in order to fill current gaps, address the main identified barrier to e-bike adoption, not compete with existing offers (e.g. the bike stores that offer multi-day e-bike trials), and the option of collecting data to inform the potential development of other more comprehensive program offers in the future.

Table 3: Comparison of e-bike program types

Program type	Pros	Cons	Recommendation
Rebates	<ul style="list-style-type: none"> • Addresses main reported barrier to e-bike adoption • Raises awareness of e-bikes 	<ul style="list-style-type: none"> • Higher cost program for Saanich • May not be accessible to lower income households depending on design 	<ul style="list-style-type: none"> • Highest priority option • Recommended for detailed program design
Financing programs	<ul style="list-style-type: none"> • Lower cost program for Saanich • Raises awareness of e-bikes 	<ul style="list-style-type: none"> • Not simple to offer as a municipality • Already on offer to Saanich residents from multiple private lenders 	<ul style="list-style-type: none"> • Not recommended
E-bike Share programs	<ul style="list-style-type: none"> • Allows trial of e-bikes at a low cost without commitment to purchase • Raises awareness of e-bikes • Lower cost program for Saanich 	<ul style="list-style-type: none"> • Previous bike share trial not successful in Saanich • Sharing of helmets or requirement to carry one is a disincentive to use 	<ul style="list-style-type: none"> • Not recommended
E-bike trial programs	<ul style="list-style-type: none"> • Allows trial of e-bikes for free without commitment to purchase • Raises awareness of e-bikes • Increases likelihood of e-bike purchase by those 	<ul style="list-style-type: none"> • Already available locally (e.g. Oak Bay Bikes "demo on demand") • Does not address main barrier to adoption (upfront costs) 	<ul style="list-style-type: none"> • Consider as a complementary program from another entity • Raise awareness of existing trial programs from local bike stores

Program type	Pros	Cons	Recommendation
	<ul style="list-style-type: none"> who will use them frequently Lower cost program for Saanich 	<ul style="list-style-type: none"> Does not address equity May not be required at our point on the adoption/availability curve of new technology, or the most important role for local government 	<ul style="list-style-type: none"> Encourage other regional bike stores to provide trial programs
Multi-modal support	<ul style="list-style-type: none"> May support “shedding” of vehicle ownership more than an e-bike program without multi-modal support 	<ul style="list-style-type: none"> Complexity and cost Data currently lacking on multi-modal needs of e-bike owners 	<ul style="list-style-type: none"> Not recommended at this time. May be considered in the future if need can be demonstrated
Combination programs	<ul style="list-style-type: none"> Wrap around service provides education, trialing, rebates, financing, and other support in one place. Addresses many barriers. 	<ul style="list-style-type: none"> More costly and complex than single approach program Requires many partners administering multiple established programs 	<ul style="list-style-type: none"> Not recommended at this time. May be considered in the future if need can be demonstrated

6.0 Pilot program design

Based upon the extensive analysis and engagement detailed in Appendices 2-5 and summarized in Section 5.0 above, the recommended option most appropriate and likely to achieve the vision and goals for an e-bike incentive program in the District of Saanich was a rebate program.

This section outlines information related to the detailed design of a rebate based incentive pilot program. Considerable analysis and engagement with key stakeholders was undertaken to ensure the program was designed to meet the vision and goals outlined in Section 4.

6.1 Incentive amounts

Incentive levels can be set based on a number of different criteria. In the case of this pilot program, the incentives aim to cost-effectively reduce GHG emissions, improve equitable distribution of government climate investments, and achieve community co-benefits.

In certain cases, incentives can be viewed as a means to make a more climate-friendly technology cost-competitive against a less climate-friendly option. For example, incentives for electric vehicles (EVs) from the Province and the Federal government's aim to reduce the upfront cost barrier for EVs versus internal combustion engine (ICE) vehicles. This approach assumes a fixed demand for personal vehicles, and seeks to direct purchasers towards EVs rather than ICE vehicles. At the time of writing, incentives of up to \$8,000 are available from combined federal and provincial sources, an additional \$6,000 is available from the SCRAP-IT program, and up to \$700 are available for home EV charging equipment, for a total of \$14,700 in rebates for the purchase of an EV. These incentives are only available for EVs under a certain price cutoff. No information is currently available about the distribution of these incentives, but it can be assumed that since EVs still have a higher purchase price than many ICE vehicles despite the rebates, the incentives are likely being accessed by higher income households more often than by lower income households.

In other cases, incentives can be viewed as a means to promote a new technology primarily through education, with incentives playing a minor role in improving affordability for those who purchase the technology. The District of Saanich's \$350 top up rebate for fossil fuel to heat pump upgrades and \$500 top up for associated electrical service upgrades can be considered in this category, as heat pumps cost in the range of \$3,500 to \$12,000 plus electrical service upgrade costs, if necessary. The Province provides a rebate of \$3,000-\$6,000 towards the same upgrade, for a total of \$6,350 rebate plus \$500 towards electrical service upgrades. Combined, Saanich residents can at the time of writing access up to \$7,350 plus group purchase rebate (up to \$500) and bonus incentives (up to \$2,000) for upgrading from a fossil fuel home heating source to a heat pump. Studies of other retrofit programs have shown that a substantial majority of retrofit program grants were received by middle- and high- income households (Shiell, 2014). The retrofit incentives are accessed by homeowners, not renters, meaning that the approximately 30% of Saanich residents who rent are not able to access this climate action funding, and due to the split incentive issue, landlords are not likely to pay for climate-friendly upgrades in rental properties where the renters pay the energy bills.

For this pilot program, unlike the examples outlined above for EVs or heating systems, people will not be one-to-one replacing an existing technology (e.g. ICE vehicle or fossil fuel heating system) with a more climate-friendly one (e.g. EVs or heat pumps). Instead, they will be adopting new technology and new behaviours for a transportation niche that e-bikes can fill. In that way, the pilot program is not aimed at overcoming the marginal cost of a more climate-friendly model of a purchase that would be made regardless, but instead must encourage adoption of a technology that

is likely new to participants and which has the potential to substitute for a portion of trips typically made by a number of other modes (e-bikes are neither regular bikes nor electric vehicles, but provide certain benefits of each.) The incentive level therefore needs to overcome the perceived cost barrier of the e-bike as a whole. As discussed in section 5.0, this pilot program does not require scrapping of an ICE vehicle to access the e-bike incentive, as that model has proven to be very restricted in its uptake, and GHG emission reductions can be achieved through trip substitution without vehicle shedding.

Another important concept in the design of incentive programs is the *free ridership* effect, in which a percentage of those who receive the incentive may have adopted the technology even if there were no incentive. In the case of home retrofit programs, free-riders are sometimes assumed to make up between 40% and 90% of total participants (Environment and Climate Change Canada, 2009), (Shiell, 2014). Reducing free ridership rates increases the cost effectiveness of the program at reducing GHG emissions.

Table 4 shows the estimated impact of different incentive amounts within a fixed budget (in this case \$50,000) on free-ridership, among other considerations. The estimate is based on an elasticity-based aggregate demand model (Aono & Bigazzi, 2019) for e-bikes. The model is based on a number of local factors such as baseline e-bike prices and local demand. It assumes that free-riders are no more likely than non-free-riders to access the incentive.

Rebates of at least \$400 result in much lower program free-ridership rates and therefore higher program impact than small rebates, according to an economic model on e-bike price and demand created by UBC researchers.

The results of the model show the number of rebates available at each rebate amount, how that rebate impacts demand, how many of those who access the incentive are free-riders and those who will only purchase with rebates (i.e. induced demand), the sales that are induced by both, and the rebate dollars and percentage of funds that flow to the non-free-riders at each rebate amount. As shown in Table, 4, higher rebate amounts result in increased induced demand as well as an increased portion of the rebate funding going to induced (non free-rider) participants.

For this reason, the pilot program is recommending higher rebate amounts in order to more cost-effectively drive new, additional e-bike purchases and induce adoption by non-free riders rather than providing lower rebate amounts that may go overwhelmingly to those who would have purchased the e-bike anyway without the incentive. Therefore, higher rebate amounts are expected to achieve considerably greater GHG reductions from the pilot due to much lower numbers of free-riders.

Table 4: Estimated impact of flat rebate program (Aono & Bigazzi, 2019)

Rebate amount	Number of rebates available	Total e-bike demand	Induced e-bike demand	Additional sales	New bike shop revenue	Rebates to additional purchasers	
\$200	250	1,720	160	23	\$90,600	\$4,700	9%
\$400	125	1,880	320	21	\$83,900	\$8,600	17%
\$600	83	2,040	480	20	\$76,300	\$11,800	24%
\$800	63	2,200	640	18	\$70,700	\$14,600	29%
\$1,000	50	2,360	810	17	\$65,900	\$17,000	34%
\$1,200	42	2,520	970	16	\$61,700	\$19,200	38%
\$1,400	36	2,680	1,130	15	\$58,000	\$21,000	42%
\$1,600	31	2,840	1,290	14	\$54,700	\$22,600	45%

The pilot aims to improve equitable distribution of climate funds through the community. Early e-bike adopters have tended to be higher-income (Bigazzi A. B., 2020). However, data indicates that lower income households may benefit more than higher income households from the affordability improvements that e-bikes provide over vehicle ownership (see Appendix A section 1.7 on costs of different modes). Additionally, lower-income households tend to be more sensitive to price and rebates for discretionary expenses, and therefore rebates can be more cost-effective with lower-income households (Bigazzi A. B., 2020). However, lower income households will need incentives large enough to make an e-bike purchase accessible, as they have lower discretionary spending potential and often less easy access to loans that could be used towards an e-bike purchase compared to higher income households. Incentives required to keep the e-bike at a similar percentage of income for different members of our community are shown in Table 5 below.

Table 5: Rebate levels required for e-bike cost to equal percentage of annual income across income deciles

Economic families and persons not in an economic family	Rebate to make a \$3000 e-bike no more than 2% of income	Rebate to make a \$3000 e-bike no more than 5% of income
Lowest decile	\$ 2,614	\$2,035
Second decile	\$ 2,414	\$1,535
Third decile	\$ 2,214	\$1,035
Fourth decile	\$ 2,018	\$545
Fifth decile	\$ 1,760	-\$100
Sixth decile	\$ 1,472	-\$820
Seventh decile	\$ 1,110	-\$1,725
Eighth decile	\$ 714	-\$2,715
Ninth decile	\$ 50	-\$4,375
Highest decile	Less than \$50	Less than -\$4,375

Research by Bigazzi and Berjisian (Bigazzi A. B., 2020) suggests that flat (or capped) rebates, rather than rebates based on a percentage value of a bike, yield better income equity. The results of Bigazzi and Berjisian’s modelled demand for different rebate amounts are shown in Table 6 below.

Table 6: Share of rebate uptake by purchaser income and rebate amount (from Bigazzi and Berjisian’s model)

Rebate amount	Low income	Medium income	High income	Low price	Medium price	High price
\$200	25%	33%	42%	35%	33%	32%
\$800	27%	34%	40%	39%	32%	29%
\$1,600	28%	34%	38%	42%	31%	27%
10%	25%	34%	41%	34%	33%	33%
20%	26%	34%	41%	34%	33%	33%
30%	26%	34%	40%	34%	33%	33%
Reference share of baseline demand	24%	33%	43%	33%	33%	33%

More cost-conscious buyers will likely stick to lower cost bikes. Choosing a lower cost e-bike and accessing a fixed dollar incentive means the rebate covers a higher percentage of the e-bike than if they had purchased a more expensive e-bike. (It should be noted that Bigazzi and Berjisian did not model a different rebate amount for different income levels.)

As shown in Table 7, the pilot program will deliver three tiers of incentives based on income, in order to balance the goals of:

- reaching 300 participants in order to collect adequate survey responses for high quality analysis;
- reducing free-ridership in order to improve cost effective additional GHG reductions; and
- improving equitable distribution of incentive funds in the community.

Table 7: Pilot program incentive amounts

Incentive Type	Incentive amount	Target Number Distributed	Total Funds Needed	% of Funds
Tier 1: Above median	\$400	180	\$72,000	36%
Tier 2: Income-qualified (median to ~LICO)	\$800	80	\$64,000	32%
Tier 3: Income qualified (~LICO and below)	\$1,600	40	\$64,000	32%
Totals		300	\$200,000	100%

A limited number of discounts for local bike safety skills courses will be provided, as a means to increase rider confidence and safe operation of the e-bike in different riding conditions. A full day adult bike safety skills class, including theory and supervised on-road practical skills development, costs \$75. Discounts of \$15 will be available for those accessing the Tier 1 incentive, \$30 for those accessing the Tier 2 incentive, and \$60 for those accessing the Tier 3 incentive will be made available while funds last.

As described in the engagement section, we are partnering with a community-based organization serving residents living below the Low Income Cut-off (LICO) to engage, design, and implement e-bike incentives that meet the needs of that sector of our community specifically. The Tier 3 incentives may change in response to further engagement findings.

6.2 Summary eligibility criteria

The following eligibility criteria have been established based upon research, best practice and stakeholder engagement:

Participant

- Residents of Saanich over 16 years of age
- One rebate per household
- Rebates are for personal not business use

E-bike

- Meets Motor Vehicle Act's definition of a Motor Assisted Cycle
- New e-bike only
- No kits

Income qualification

- Larger income-qualified incentive is available to households at or below the median total income for the Census Metropolitan Area (CMA) by number of people in the home. Largest income-qualified incentive is available to households below the Low Income Cut-Off (LICO)

6.3 Participant experience flow

Figures 1 and 2 demonstrate the participant experience for the 'Rebate to Resident' and 'Point of Sale Incentive Through Vendor' processes, respectively.

A 'Rebate to Resident' process is the simplest participant experience flow. A 'Point of Sale' option reduces upfront costs, which improves equity. The 'Point of Sale' incentive will only be available through local (Capital Region) e-bike vendors who also provide maintenance services, as a means to encourage support for local businesses and well-maintained e-bikes for participants. Offering both options ensures choice for residents. Additionally, a large selection of vendors serves to alleviate potential supply issues and/or avoid rebates influencing local sales prices.

Figure 1: Rebate to Resident Process

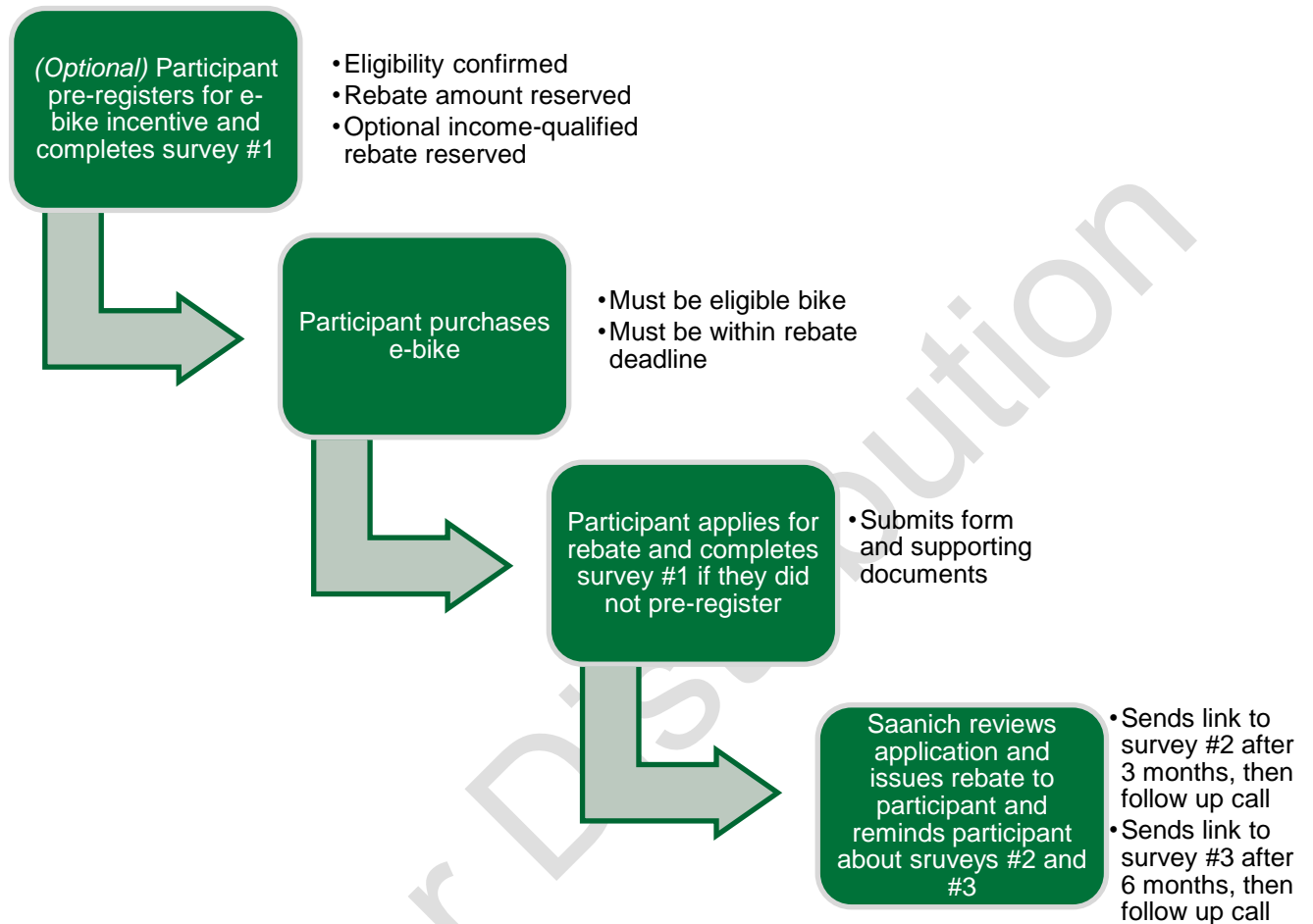
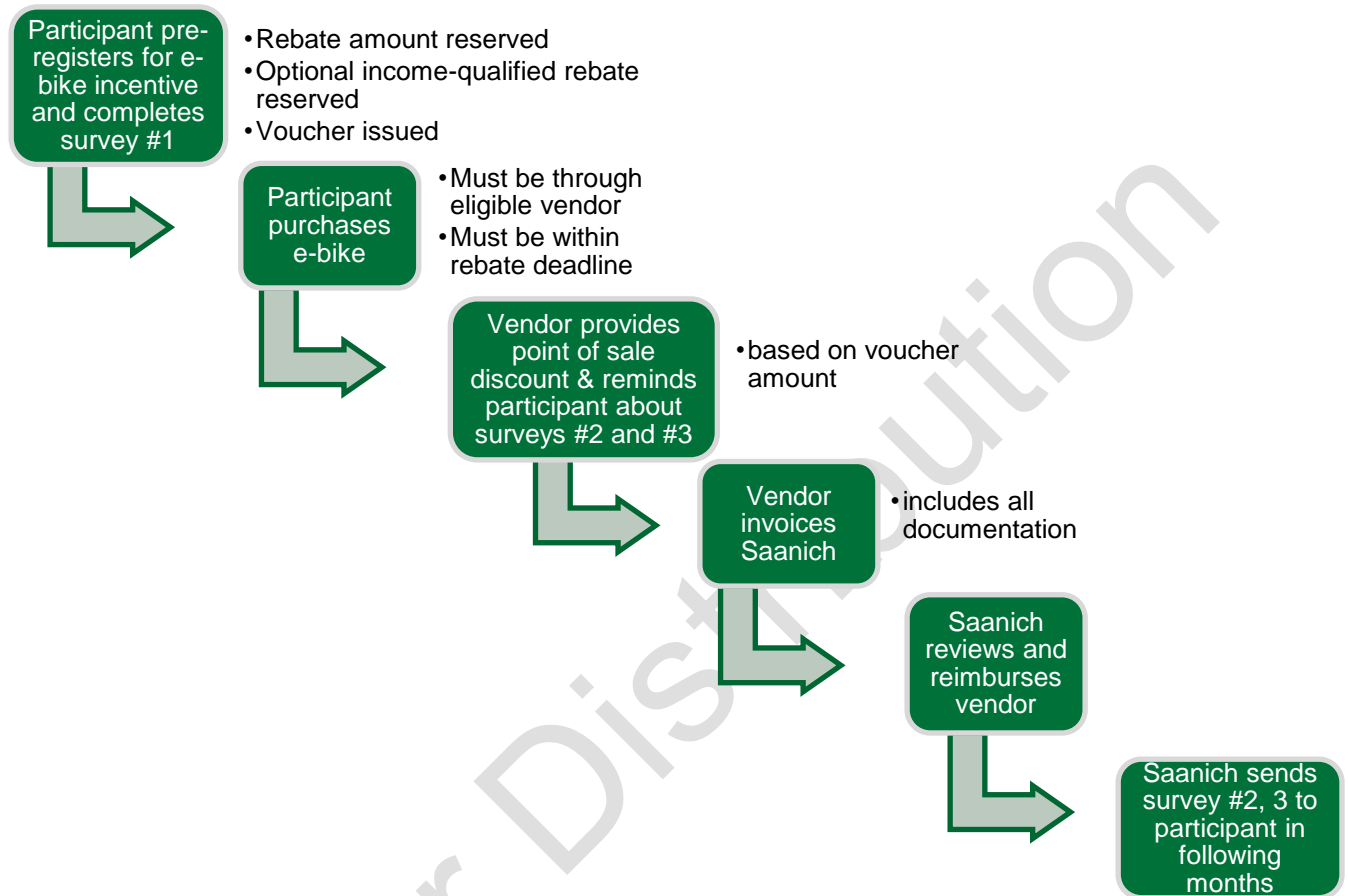


Figure 2: Point of Sale Incentive through Vendor Process



6.4 Risk mitigation

Incentive programs must take care to balance ease of access for participants with reducing the likelihood of misuse of funds. Table 8 outlines identified risks and mitigation measures for the pilot e-bike incentive program.

Table 8: Risk mitigation

Risk	Likelihood	Mitigation Measure	Impact after Mitigation
Non-Saanich residents apply	High	<ul style="list-style-type: none"> • Proof of residency documents • Sending cheque only to Saanich address 	Low
Under-reporting income (e.g. not submitting all household	Medium-High	<ul style="list-style-type: none"> • Only one rebate per household, so this cannot be done repeatedly for a profit • Extra steps to apply for income qualified rebate may act as a deterrent 	Medium

Risk	Likelihood	Mitigation Measure	Impact after Mitigation
NOAs) to access the income-qualified rebate		<ul style="list-style-type: none"> Not a risk if documentation other than NOAs that have robust intake assessment (e.g. disability assistance, L.I.F.E program participation.) are submitted 	
Bike resold	Medium	<ul style="list-style-type: none"> Resale values for e-bikes may be lower than original purchase price after rebate Only one rebate per household, so this can't be done for a profit on a regular basis More used e-bikes in the region presents a benefit for active transportation and is an acceptable outcome 	Low
Bike returned to store for refund after accessing rebate	Medium	<ul style="list-style-type: none"> E-bike vendor policies (e.g. returned e-bikes must be under 100km of use, charging restocking fees, or up to vendor discretion based on condition, etc.) Clause in rebate to resident application form that requires return of rebate if they return the e-bike to the vendor Clause in point of sale incentive that requires vendor to not invoice Saanich for the incentive if the e-bike is returned to the store Only one rebate per household, so this can't be done for a profit on a regular basis 	Low
Non-personal use of e-bike	Low	<ul style="list-style-type: none"> Sending cheque only to a person, not a corporation Clause in application form stating the e-bike is for personal transportation Bigger e-cargo bike fleet incentives available from CleanBC 	Low

6.5 Communication and promotion

To encourage participation in the Community E-bike Incentive Pilot Program, Saanich will develop and distribute both broad and targeted outreach communications materials aimed at specific participant groups as outlined in Table 9.

Table 9: Potential e-bike adopter groups and outreach options

Potential Adopter Group	Potential Organizations/ Communications Channels	Materials Needed
Saanich residents	<ul style="list-style-type: none"> All residents Community festivals Earned media 	<ul style="list-style-type: none"> Saanich webpage, utility bill insert Signs, demonstration e-bicycle Media release & event, speaking notes
Income qualified groups	<ul style="list-style-type: none"> L.I.F.E program TAPS Food banks 	<ul style="list-style-type: none"> E-newsletter content Posters Leaflets

Potential Adopter Group	Potential Organizations/ Communications Channels	Materials Needed
	<ul style="list-style-type: none"> • Church outreach groups 	<ul style="list-style-type: none"> • Saanich Active Living Guide
Parents of toddlers and young children	<ul style="list-style-type: none"> • Island parent magazine, • Elementary schools, daycares, playground notice boards • Local social media groups 	<ul style="list-style-type: none"> • Articles with testimonials, • Print ads, posters • Events to try a bike • Active Living Guide.
Teens and young adults	<ul style="list-style-type: none"> • High schools, university and colleges • District of Saanich youth groups 	<ul style="list-style-type: none"> • Emails to School Districts • Emails to One Planet Saanich schools
Middle aged residents	<ul style="list-style-type: none"> • Community associations, large employers with good bike parking (requires research) through ads in Chamber of Commerce newsletter or SIPS? 	<ul style="list-style-type: none"> • Presentations, ads (social, print, click)
Seniors	<ul style="list-style-type: none"> • Silver Threads • Community Associations 	<ul style="list-style-type: none"> • Brochures, presentations, newspaper ads, e-newsletter content
Racialized groups	<ul style="list-style-type: none"> • Chinese Seniors' group • Indo-Canadian women's group • Religious organizations, etc. 	<ul style="list-style-type: none"> • Diverse photos of e-bike riders in materials • Potential translation of materials.
Newcomers to Saanich and Canada	<ul style="list-style-type: none"> • Newspaper ads • ICA • VIRCS 	<ul style="list-style-type: none"> • Newspaper ads, radio ads, google click ads, social media ads • E-newsletter content, translated posters and leaflets, e-bike demo event.
Residents considering purchasing a vehicle	<ul style="list-style-type: none"> • Google click ads 	<ul style="list-style-type: none"> • Newspaper ads, google click ads
People interested in active living	<ul style="list-style-type: none"> • Saanich rec centres. 	<ul style="list-style-type: none"> • Posters, leaflets
Residents not well served by public transit	<ul style="list-style-type: none"> • Busy/congested traffic areas 	<ul style="list-style-type: none"> • Roadside construction notice board? • Radio ads during rush hour?
Climate-conscious residents	<ul style="list-style-type: none"> • Through eco-groups (e.g. the GVAT, GVBTS, One Planet Saanich, Creatively United, religious groups, etc.) 	<ul style="list-style-type: none"> • e-newsletter content, presentations, posters

6.5 Timeline

Table 10 outlines the pilot program timeline, including the data collection over 12 months following e-bike purchase, analysis, and reporting.

Table 10: Pilot program timeline

Activity	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022-Q2 2023	Q3 2023
Engagement and program design									
Funding application									
Funding approved									
Launch and deliver									
Interim reports on program uptake									
Collect survey data (12 months from e-bike purchase)									
Analyze survey results and report									

6.6 Budget

Table 11 provides information related to the budget for the proposed incentive pilot program. This will be dependent upon a successful grant application to secure \$120,000, plus \$50,000 from District of Saanich, and in-kind contributions from partner organizations.

Table 11: Pilot Program Budget

Item	Source(s)	Cost
Program design and engagement	District of Saanich, Community Social Planning Council, University of British Columbia	Staff time + \$2,300
Program launch and delivery - Administration & advertising	District of Saanich	Staff time + \$5,300
E-Bike Incentives	District of Saanich (Sustainability)	\$200,000
2 x Trial an e-bike events	FCM Green Municipal Fund (subject to grant)	\$2,000
Safety Skills Course discounts		\$6,000
Data collection & reporting	District of Saanich	Staff time
Survey design, data analysis & reporting	University of British Columbia/NSRC	In-kind
Equity engagement, design, and evaluation	Community Social Planning Council	In-kind
Total Cash		\$215,600

7.0 E-bike incentive pilot program impacts

7.1 Environmental impacts

The e-bike incentive program has been designed and modelled to reduce GHG emission from personal transportation at the individual participant and community level (Goal 3). From an embodied carbon and lifecycle analysis point of view the program has the potential to reduce embodied carbon if e-bike ownership results in vehicle shedding (Goal 6), and includes measures to reduce the chance of low-quality e-bike purchases resulting in e-waste before the optimal end of life of the equipment.

7.1.1 GHG reductions per e-bike

In Saanich, e-bikes create low-to-no emissions in operations since they run on renewable, low-carbon electricity. They are very light and energy efficient compared to personal motor vehicles, which must use energy to move a heavy vehicle in addition to passengers and cargo.

Preliminary studies suggest that e-bikes displace many different modes of travel, including walking, cycling, transit use, and personal vehicle use (Fyri, 2020), (Bigazzi A. a., 2020).

A meta-analysis of published studies from around the world of mode substitution by e-bike users (Bigazzi, 2020) found that a median of 24% of the total e-bike trips taken replaced automobile travel. 33% replaced public transit, 27% replaced conventional bicycles, and 10% replaced walking. E-bikes displaced relatively more public transit in China, and more auto travel in Europe, North America, and Australia.

The meta-analysis also found that newer studies reported a greater displacement of driving and walking and lesser displacement of conventional cycling, which may indicate a positive trend for e-bikes and GHG emission reduction potential.

A report commissioned from UBC by the City of Victoria (Aono & Bigazzi, 2019) reviewed studies from Europe showing e-bike adoption can be estimated to displace 38 km of driving, 10 km of transit, 20 km of conventional cycling, and 4 km of walking on average per week. These displacements would represent a reduction of 0.46 tCO₂e per year per e-bike rider.

For [their e-bike incentive program](#), the Yukon territorial government (Yukon, 2018) assumes a savings of 0.85 tCO₂e (tonnes of Carbon Dioxide equivalent) per year per e-bike, based on local findings of near 100% replacement of vehicle trips by early adopter e-bike riders.

7.1.2 GHG reductions at the community level

Modelling conducted in the development of the Climate Plan (C2MP Consulting Ltd., 2019) indicates that widespread adoption of e-bikes, resulting in an average bike trip length of 5.3km (rather than the current average bike trip length of 3.3km) could deliver an additional 6,000 tCO₂e savings annually overall compared to active transportation without widespread e-bike adoption. That equates to more than 1% of our community-wide annual territorial GHG emissions, which is considerable for a single action. However, more research is required in order to understand the behavior of new e-bike adopters to fully understand the potential GHG emissions reductions from e-bikes in Saanich.

A model of the GHG reductions potential of the E-bike Incentive Pilot Program is presented in Table 12 below, using a range of GHG reductions per person.

Methods

The lower estimate for GHG reductions per e-bike is taken from Aono and Bigazzi’s meta-analysis of mode shifting in international e-bike studies (Bigazzi A. a., 2020), and the higher estimate is taken from the Yukon government’s e-bike GHG impacts model (Yukon , 2018). The assumption of GHG reductions per e-bike rider was reduced by 15% for Tier 3 participants, as LICO and below participants are already more likely to use modes other than driving a personal vehicle (see Appendix 1 for details). These assumptions can be further tested in program evaluation.

Induced demand refers to the demand over and above baseline demand that would exist without the rebate program. In other words, induced demand refers the non-free-riders in a program – it is those participants who would not have purchased the e-bike if the rebate had not been available. Free-riders are participants who would have purchased the e-bike regardless of the incentive. The induced demand rates for Tier 1 and 2 rebates were taken from the estimation of program impacts model on page 66 of the UBC report for the City of Victoria (Aono & Bigazzi, 2019). The impact of the use of income-qualified tiers and reserving funds for different tiers was not calculated in the report. Lower income households are more sensitive to incentives, but may have a lower demand starting point (Bigazzi A. B., 2020). For the purpose of this evaluation, Tier 1 and Tier 2 induced rates are not treated differently from the Aono and Bigazzi model. The induced demand for Tier 3 rebates is assumed to be 100% as it is unlikely the below LICO households would have purchased an e-bike without the incentive program. These assumptions can be further tested in program evaluation.

E-bike lifespan varies tremendously depending on use and technology change (i.e. whether compatible batteries are available at replacement time). Therefore, rather than a lifespan of the e-bike calculation, 8 years was chosen as a cumulative calculation in order to show the impact of the program from anticipated launch and data collection to 2030, at which point the Saanich Climate Plan has targeted a 50% GHG emissions reduction from baseline.

Baseline: No E-bike Incentive Pilot Program

Action Case: E-bike Incentive Pilot Program implemented

Table 12: Cumulative GHG emission reduction estimate

Program component	Lower estimate	Higher estimate	Unit
\$400 rebate			
Number of participants	180	180	People/incentives
GHG reductions per person per year	0.46	0.85	tCO ₂ e/year
Total GHG reductions per year	82.80	153.00	tCO ₂ e/year
Induced demand @\$400 incentive	17	17	%
Induced GHG reductions	14.08	26 01	tCO ₂ e/year
Cumulative to 2030 (assume 8 years of e-bike use)	112.61	208.08	tCO ₂ e
\$800 rebate			

Program component	Lower estimate	Higher estimate	Unit
Number of participants	80	80	People/incentives
GHG reductions per person per year	0.46	0.85	tCO ₂ e/year
Total GHG reductions per year	36.80	68.00	tCO ₂ e/year
Induced demand @\$800	29	29	%
Induced GHG reductions	10.67	19.72	tCO ₂ e/year
\$1600 rebate			
Number of participants	40	40	People/incentives
GHG reductions per person per year	0.39	0.72	tCO ₂ e/year
Total GHG reductions per year	15.64	28.90	tCO ₂ e/year
Induced demand @\$1600	100	100	%
Induced GHG reductions	15.64	28.90	tCO ₂ e/year
			tCO ₂ e
Whole program			
Induced reductions for 2 years of program	80.78	149.80	tCO ₂ e
Total reductions cumulative for 2 years of program	270.48	499.80	tCO ₂ e
Induced reductions cumulative to 2030 (assume 8 years of program)	323.10	597.04	tCO ₂ e
Total reductions cumulative to 2030	1,081.92	1,999.20	tCO ₂ e

As shown in Table 12, the total emissions reductions from e-bike adoption by participants in the pilot phase of the program may range between 270 to 500 tCO₂e in the first two years and 1,000 to 2,000 tonnes of CO₂e by 2030.

A key goal of the pilot is to collect high quality data from at least 100 participants to enable rigorous evaluation of program impact in order to determine the long term value of a wider municipal or provincial e-bike incentive program. (For more details on the study, see 8.0 Pilot program evaluation and reporting.). As such, the pilot would be used to verify emissions savings from participants and make recommendations for a larger incentive program to maximize those savings and minimize free ridership.

An additional goal of the pilot is to increase awareness of the value of e-bikes and accelerate wider community adoption. The spillover effects from the promotional campaign, word of mouth impacts, and advancing the adoption curve from innovators/early adopters to early majority are not considered in the above analysis, but could include considerable additional GHG emissions reductions.

7.1.3 Lifecycle impacts

From a consumption-based GHG emissions perspective, e-bikes use fewer materials than motor vehicles and create less wear and tear on the roads. If e-bike ownership results in vehicle shedding,

there will be consumption-based emissions reductions from reduced ownership of private vehicles. Bicycles can be used practically indefinitely, replacing components as required.

E-bikes, like EVs, typically use lithium-ion batteries. These batteries are resource-intensive, requiring energy-intensive mining. An e-bike requires significantly less materials than an EV battery. The batteries have a limited lifespan, and may need to be replaced after 4 to 8 years of use. Unlike used EV batteries, it is unclear whether e-bike batteries have potential for a useful second life prior to recycling. However, e-bike battery recycling is available. As of January 2021, the District of Saanich will become a drop-off spot specifically for e-bike batteries through the Call-2-Recycle program, and local e-bike vendors will also become drop-off locations for e-bike battery recycling. The Capital Regional District has plans to include e-bike battery recycling information on their [MyRecyclopedia](#) online resource.

As described in Appendix 5, program design includes measures to reduce the risk of low-quality e-bikes being purchased that have a shorter lifespan than industry average, with the goal of reducing unnecessary e-waste.

The embodied emissions in cycling infrastructure are not considered a part of this analysis, as Saanich has already committed to building cycling infrastructure regardless of the implementation of the e-bike incentive program. However, the accelerated uptake of e-bikes supported by this e-bike incentive program would increase the use of that cycling infrastructure and reduce wear and tear on roads from reduced car travel.

7.2 Social impacts

The pilot aims to achieve multiple important social impacts through the following program goals:

- Goal 2: Provide a program that is accessed by households across the income spectrum in Saanich
- Goal 5: Reduce household transportation costs
- Goal 4: Increase physical activity levels of participants during transportation activities

7.2.1 Goal 2: Equity

E-bike adoption to date in other communities has tended to be strongest among higher income households. (Bigazzi A. B., 2020). Financial incentive programs for many climate-friendly purchases have tended to also be accessed more frequently by those with higher incomes than the community average (CUSP, 2018), as the ability to pay for the item and then wait to receive a rebate is most available to those with cash on hand for discretionary purposes or borrowing room at reasonable interest rates..

The pilot program aims to achieve greater equity in climate action through providing a larger incentive for households at and below the median, and reserving 50% of the funds for this group as well. Additionally, we propose working with a community-based organization to improve access to e-bikes to residents living under the LICO.

7.2.2 Goal 5: Affordability

Transportation is typically the second largest household cost in the region, surpassed only by housing costs. Reduced transportation costs can ease pressure on household budgets facing high home ownership or rental costs.

The CRD estimates the average annual transportation cost per household in Saanich is \$12,294, a large part of which are the fixed costs of vehicle ownership. For a family making the median income in Saanich the average transportation cost would represent 18% of their annual after tax income.

The average annualized cost of ownership for a single motor vehicle is estimated to be \$7,067 (see Appendix A section 1.7 for detailed costs of different transportation modes).

E-bike ownership, by contrast, is estimated to have an annualized cost of \$1342. Thus, the annual savings from substitution one e-bike for one household motor vehicle can easily be in the range of three to four times the up-front cost of the e-bike. Put differently, the e-bike could pay for itself in a matter of months, with resulting savings of several thousand dollars per year for each year the e-bike is used. The impact of that scale of savings, for a low to middle income household, could be larger than many important federal and provincial transfers to individuals.

That being said, e-bikes are not a one-to-one replacement for vehicles, and therefore additional costs for backup transportation such as continued vehicle ownership, taxis, busses, car sharing, or other modes may be incurred throughout the year. However, households where backup transportation cost would exceed savings would be quite rare, and such households would likely not self-select into e-bike ownership.

7.2.3 Goal 4: Physical activity

E-bikes have the potential to increase physical activity levels for improved mental and physical health. Hoj et. al. found that “e-bikes are an active form of transportation capable of providing much of the cardiovascular health benefits obtained during conventional bike use” (Hoj TH, 2019). Further, Castro et. Al. found that “e-bikers take longer trips by e-bike and bicycle, compared to cyclists” (Alberto Castro, 2019)

7.3 Economic impacts

Supporting Goal 7 (support the local clean economy and employment), the Aono and Bigazzi (Aono & Bigazzi, 2019) model shows that an e-bike incentive program will induce additional e-bike sales relative to a no-incentive scenario and induce bike shop revenues that exceed the total rebate amounts in most scenarios, thus delivering benefits to e-bike vendors that exceed the costs to government for the program. Additionally, the pilot will undoubtedly induce increased work at local bike shops for repairs and maintenance of e-bikes on a regular basis, which will also support the local clean economy.

We anticipate that many households will continue to own cars, but for those who do not, there may be a slight negative impact on the car sales and maintenance sector of the economy.

For participants, access to an e-bike may decrease overall household expenses for transportation, which is typically the second largest single expense for households in our region, following housing costs. More detailed analysis on fixed and variable costs for household transportation options can

be found in Appendix 1. Reducing transportation costs, especially for low-to-mid income households, may have beneficial spillover effects in other parts of the local economy, through freeing funds for essential or discretionary purchases. This can result in economy-wide impacts and net fiscal benefits.

7.4 Financial feasibility

Incentives are a common approach to climate action at the municipal, regional, provincial, and federal level. The financial feasibility of an incentive can be measured in several ways, including the cost per ton of GHG emission reduction (cost per tCO_{2e}) and by the opportunity cost (i.e. comparing scenarios where the same funds were used for a different purpose).

Various methodologies exist for assessing cost per tCO_{2e} saved from climate action programs. The estimated cost per tCO_{2e} for this pilot relies on assumptions such as GHG reductions per person based on trip substitution behavior and free ridership rates, as well as on evaluation boundaries (costs to the District, to other funders, for incentives alone or entire project budget, etc.). Table 13 presents a range of costs per tCO_{2e} reflecting the incentive budget and low and high trip substitution/GHG emission reductions detailed in Table 12 from all program participants. Free ridership rates are not included in the calculations below, and would increase the cost per tCO_{2e}, but many measures are in place to reduce free ridership in the program design. The pilot will also include a robust study to evaluate actual trip substitution behaviours and resulting GHG savings, to further refine these cost per tCO_{2e} estimates for future programs.

Table 13: Costs per ton of GHG reduction from pilot

Cost/tCO_{2e}	GHG reduction from all 300 participants – 8 year cumulative
Saanich cash contribution	\$35 - \$65
Total incentive budget (multiple sources)	\$100 - \$185

The municipality invests in a variety of climate actions that are evaluated based upon both their climate impact and other co-benefits. Currently, the District of Saanich purchases Renewable Natural Gas at a premium for use in our key corporate facilities in order to reduce our GHG emissions. This costs approximately \$222 per tCO_{2e} saved. The District is also currently pursuing the purchase of Renewable Diesel at a premium to reduce our corporate fleet GHG emissions. Similar to RNG, this costs approximately \$250 per tCO_{2e} saved.

Based upon the above, the cost per tCO_{2e} to the municipality for an e-bike incentive pilot program appears to be more cost competitive than other District of Saanich climate actions, while also contributing greatly to other important community co-benefits. The GHG savings achieved per dollar invested will be confirmed through evaluation of the pilot program, especially regarding trip substitution behavior.

Opportunity costs for the pilot program are difficult to quantify. The District is pursuing multiple initiatives to meet our 2030 climate targets. The funding could be used towards building cycling or EV charging infrastructure, subsidizing transit passes for residents, or any number of other community level climate initiatives. This strategy was chosen as one of a suite of climate actions due to personal transportation being the largest single source of GHG emissions in our community, the potential for delivering multiple co-benefits for participants, the opportunity to develop and share robust academic evaluation of the pilot program’s impacts, and the potential to significantly increase

the effectiveness of active transportation investments in reducing GHG emissions through encouraging longer trips by active transportation.

Not for Distribution

8.0 Pilot program evaluation and reporting

The District will collaborate with the University of British Columbia and the Community Social Planning council to evaluate the program. The evaluation will include reviewing program goals 1-8 and program targets (see Table 2) with both qualitative and quantitative measures.

There is little peer-reviewed research on the impacts of e-bike incentive programs on e-bike adoption or usage (Bigazzi A. B., 2020), and no local data on the impacts of e-bike adoption on transportation behaviour and consequent GHG emissions. Therefore, academic involvement in pilot program evaluation will be beneficial for the municipality and for advancing academic knowledge in this area. A robust evaluation study of the Community E-bike Incentive Pilot Program will provide insights about the following:

- how rebates influence uptake of e-bikes;
- program impacts on trip substitution and GHG savings;
- options to modify the program design to better address program goals; and
- procedural and distributional equity in accessing program
- co-benefits such as activity levels, transportation affordability
- evidence regarding the benefits of expansion to a larger geographic scale or other locations.

Prof. Alex Bigazzi with UBC's Dept. of Civil Engineering and School of Community and Regional Planning will pursue research on the impacts of the pilot program on e-bike use for personal transportation. Such a study would provide insights about how rebates influence uptake of e-bikes, which could then be used to generate a clearer understanding of program impacts, modify the program design to better address program goals, and provide evidence for expansion to a larger geographic scale or other locations.

The study would consist of:

- 3 questionnaires delivered as follows: at the time of application, 3 months after application, and then again 12 months after application.
- A control group of e-bike adopters through local bike stores who do not access the rebate program
- At least roughly 100 rebate receivers participating in the survey (which would not be mandatory). Response rates are difficult to predict in this context, but the program should include at least 300 rebates to ensure a sufficient sample is obtained.

The study would require roughly two years to plan and execute. The two years would include roughly 6 months for preliminaries (grant writing, study design), roughly 12 months of data collection, and another 6 months of analysis and deliverable presentation.

Separately from the academic study, the District will keep detailed records of program participation, including:

- Number of incentives issued by date and method (point of sale vs. rebate)
- Number of and percentage of funding used for base and income-qualified incentives
- Models and costs of e-bikes purchased
- Number of online purchases vs. local vendor purchases
- Participation rates by local area/neighbourhood

- Number of pre-approvals that complete or don't complete within timeline
- Number of rejected applications and reasons
- Number of inquiries by phone, email, or in-person
- Number of page visits to program web page

This information will also be invaluable to analyze to better understand the effectiveness of the pilot and design recommendations for future programs.

Following the close of the incentive pilot program, the District of Saanich will prepare a report to funders on program uptake and initial lessons learned, and will be available to share information with interested sustainability practitioners at the local, provincial, national, and international scale through established networks.

The University of British Columbia and the Community Social Planning Council may also report on the above described research initiatives. Results could include academic journal articles and case study reports for practitioners on designing equity in climate programs.

9.0 Conclusion & next steps

This feasibility study has demonstrated that a pilot e-bike incentive program, incorporating equity measures and robust academic evaluation of subsequent behaviour change, is both a feasible and appropriate local government climate action, with the potential to achieve cost-effective GHG emission reductions and important community co-benefits.

Consequently, the District of Saanich will pursue funding for the pilot. Should incentive funding be secured, UBC researchers will proceed to secure research funding and design the survey, and the Community Social Planning Council will seek funding to support advising on equity measures in detailed program design. Since engagement and overall program design are already complete, depending on when funding is secured, pilot launch can be anticipated in Q3 or Q4 of 2021.

Should the pilot be successful, financial support sources and options will be explored for a longer term and broader program. One option could include working with the Province to modify their current e-bike incentive program tied to the SCRAP-IT program into a model that will result in greater uptake, and the potential to partner with municipalities on top-up incentives. Another option could be exploring funding available for encouraging increased physical activity and, for those mid to low income households, poverty reduction funding.

Appendix 1: E-bike baseline data

A1.1 Current e-bike mode share

Current e-bike mode share in Saanich is unknown, but anecdotally local sales are growing rapidly, in line with worldwide trends.

Global trends

Globally, 35 million electric bikes were sold in 2015. Electric bike sales in that year were 70 times larger than electric vehicle sales in the same year (Sutton, 2016). Sales of e-bikes continue to grow, with many manufacturers reporting dramatic growth in sales between 2019 and 2020 (Hawkins, 2020) (Frothingham, 2020).

Lack of local data

Statistics Canada does not include e-bikes as a category in journey to work census questionnaire. E-bikes may be reported as either “cycling” or “other” by respondents.

E-bike sales data at the provincial level are not currently available.

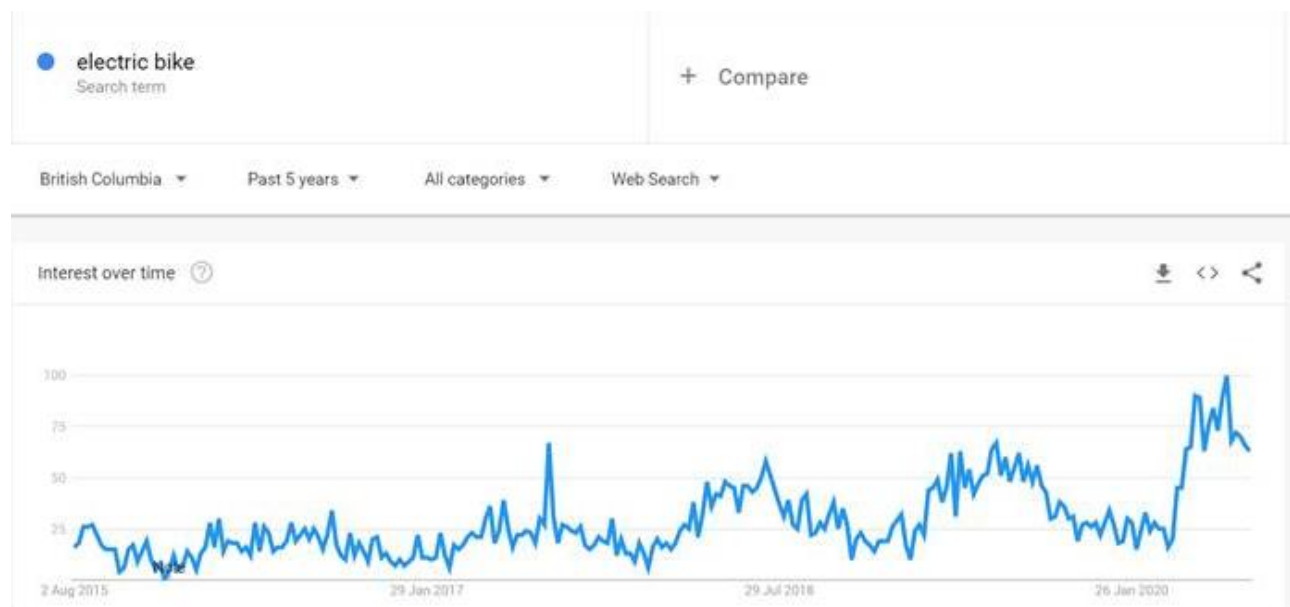
Regionally, the [CRD bike counts](#) program does not distinguish between e-bikes and other bikes, and does not plan to separate e-bikes in future counts.

Indicators of local e-bike trends

According to the Saanich Active Transportation Plan, in 2017, 5% of personal trips in Saanich were completed by bicycle. E-bike mode share can be assumed to be a percentage within this category, showing that while likely growing rapidly, it is not currently a widely adopted transportation choice in Saanich.

Although not necessarily exactly correlated with e-bike sales, a large increase in the online searches for e-bikes in BC has been recorded on Google trends since early 2019 compared to the previous 4 years, as shown in Figure 3 below.

Figure 3: 5 year trend in Google searches for e-bikes in BC



The number of e-bike retailers in a given location can be used as a proxy to understand the local availability of e-bikes (Aono & Bigazzi, 2019). The CRD's Capital Region Local Government Electric Vehicle (EV) + Electric Bike (E-Bike) Infrastructure Backgrounder found that all of the bicycle shops in the region interviewed reporting growing sales numbers for e-bikes (CRD, 2020).

Of the three bike stores in Saanich that sell new bikes, in August 2020, two stores also advertised that they sell e-bikes. Regionally, a large number of bike stores, outdoors stores (e.g. MEC), and other large retailers (Best Buy, Walmart, Canadian Tire) in the Capital Region sell e-bikes, along with online sales from Pedego, Radbikes, and other online suppliers.

While the CRD's Origin Destination study (Malatest, 2017) currently does not include an e-bike category, the next Origin Destination study in 2022 will include e-bikes. The upcoming study will likely be the best data source for e-bike mode share in Saanich, and it will also include trip duration, distance, and purpose.

A1.2 E-bike costs and available styles

A wide variety of e-bike costs and styles are available to Saanich residents. A review of local, regional and online retailers was analyzed in summer 2020 and the findings are summarized below.

There are nearly 30 bike stores in the Capital Region selling e-bikes. A review of the two Saanich bike stores that sell e-bikes showed 4 different e-bikes advertised, with costs ranging from \$1,899.99 to \$3,799.95, with an average cost of \$2,612.47. None of the bikes advertised were cargo bikes or included child-carrying equipment, although these are widely available at bike stores elsewhere in the region. In addition, over two dozen e-bike vendors currently sell to Canada online, with a huge array of prices and models.

E-bike manufacturers, dealers, large retailers such as Canadian Tire, Walmart, Best Buy, as well as non-bike outdoor companies such as MEC are all advertising their e-bike sales online. Despite an anecdotal surge in interest in e-bikes, most models were available to order, while very few were sold out or taking waitlists.

Mountain, city, cruiser, folding, and fat e-bikes (called as such for their wide tires) were available online in a wide array of brands and models and price points, with a diversity of sizes and styles sure to suit a great many people of various travel needs and personal styles. Cargo bikes for freight and children were also widely available although less numerous in models available, and available at a higher price point than non-cargo bikes in the same brand. Specialty e-bikes such as adult tricycles for those with balance issues were the least numerous found through the general web search.

A cursory review of e-bike models from three different online e-bike outlets specializing in higher-end, lower-end, and mixed price points showed an average price of \$3,762 for all 70 models reviewed, with a range from \$1,399 to \$13,129. Excluding cargo e-bikes, the average e-bike purchase cost was \$3,260. Cargo bikes averaged \$5807 in price. Child-carrying seats were frequently not included in these prices, so would usually be an additional expense for transporting younger children.

This review demonstrates that a typical e-bike shopper in Saanich might see a wide variety of e-bikes with a range of prices.

A1.3 E-bike charging access

E-bikes have long ranges (typically 32-160 kilometers) depending on how the motor is used, and unlike an electric vehicle, can be pedaled even when entirely out of battery.

E-bike batteries can be removed from the bicycle and charged at any 110 volt outlet with a charger (similar to a laptop charger) specific to that battery model. Charging should happen indoors, as the chargers are not rated for outdoor use, and are vulnerable to theft.

The District of Saanich provides charging for e-scooters and mobility devices at our recreation centres. Gordon Head Recreation Centre reported that they have not had people ask to charge their e-bike batteries inside and that the exterior charger only gets used a few times a year, and usually not for e-bikes. G. R. Pearkes, Cedar Hill Rec, and Saanich Commonwealth Place also reported that no one has asked to charge their e-bike batteries inside. Cedar Hill Golf staff indicated that they are sometimes asked to store electric bikes inside and to charge electric batteries for golf bag pull carts, but these requests cannot be accommodated based on staffing and liability.

The City of Victoria and the City of Colwood each provide public e-bike charging in the form of an exterior electrical outlet near a bike rack. Anecdotally, the City of Victoria's e-bike charging is mainly used for electric scooter charging, as is the City of Colwood's charger. Similarly, the City of Austin, Texas created a solar-powered public charging station for e-bikes, cell phones, laptops, and other devices, but have no plans to expand electrical outlet kiosks for e-bikes as this is not considered a barrier to e-bike adoption in their city.

Calls to local cafes, pubs, and restaurants along busy bike routes with frequent use by cyclists (Tre Fantastico, 4 Mile Pub, Glo Restaurant, Drake Eatery) revealed that staff have not noticed any

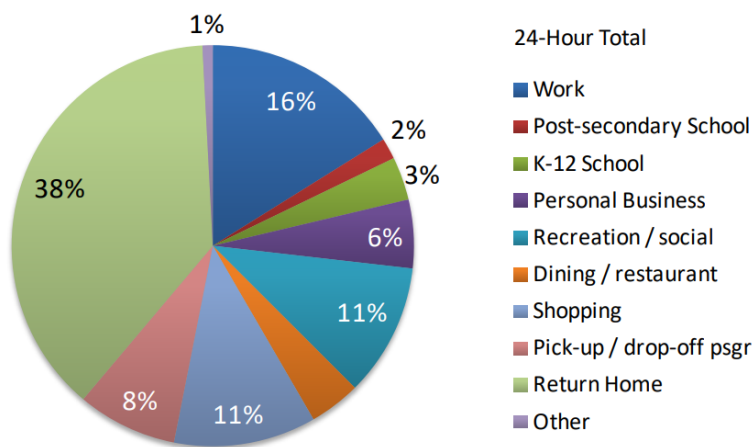
customers charging e-bike batteries at these locations, although the Drake Eatery did say that there have been people who have charged their one-wheel electric micro-mobility devices there before.

Given the increasing presence of e-bike riders in Saanich without a corresponding increase in use of electrical outlets at likely stopping points for cyclists, it is assumed that there is not currently a need for charging facilities for e-bike riders, and that home charging is likely adequate in most circumstances. Education about e-bike range to combat range anxiety may be more important than providing charging facilities to overcome this perceived barrier.

A1.4 Current trip data

An analysis of the current trips in Saanich is important to understand the opportunities to replace higher GHG trips with e-bike trips. As shown in Figure 4, the main trip purposes in the CRD are travel to and from work, recreation/social, shopping, pick up/drop off passengers, and personal business, followed by school trips, restaurants, and other. E-bikes are appropriate for replacing some but not all of these trips (e.g. some carpooling trips are hard to substitute, since passengers on e-bikes are typically only young children. Similarly, shopping by e-bike is possible for small and medium items such as groceries, clothing, or small appliances, but not for larger items like furniture.)

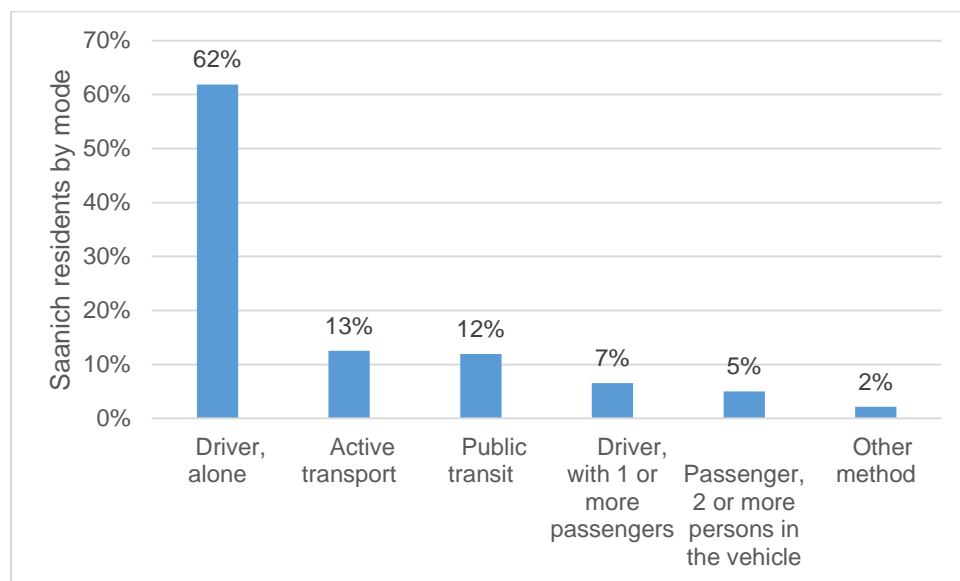
Figure 4: Personal trips by purpose in CRD (2017 CRD Origin Destination household travel survey)



According to the 2016 census, as shown in Figure 5, 62% of trips to work in 2016 were by driver alone, while 13% were by active transportation. This indicates that trips to work are more likely to be done with sustainable modes than non-work trips, and may indicate that e-bike adoption for work trips may be easier than for non-work trips.

(Active transportation is defined by statistics Canada as walking or cycling. It is assumed that e-bike users would report their journey to work in this active transportation category, but they may also have used the “other” category, which was not defined.)

Figure 5: Journey to work by mode in Saanich, 2016 census



A1.5 Current vehicle ownership rates

According to the CRD’s Origin Destination Survey, the average number of vehicles owned per household in Saanich was 1.67 vehicles. As shown in Table 14, it’s most common in Saanich for households to have one vehicle only, followed by two vehicles per household.

On average, Saanich households own 1.48 adult bicycles per person, a slightly lower figure than vehicle ownership. As noted above, e-bike ownership rates are not known at this time. Ownership rates do not translate directly into use for trips, as ownership rates for vehicles and bicycles are quite similar, whereas mode share rates for vehicles and bikes are currently very skewed towards vehicle trips. In order for an e-bike incentive program to be useful for reducing GHG emissions, the e-bikes would need to not only be purchased but also used to substitute vehicle trips.

Table 14: Household vehicle availability in Saanich

Households by vehicle availability in Saanich	Total Households	%
No vehicles	3,010	6%
1 vehicle	20,180	43%
2 vehicles	16,580	35%
3+ vehicles	7,260	15%
Total	47,030	100%

A1.6 Transportation demographics and distances

Understanding the demographics of travel choices may support reaching those groups with the highest GHG reduction potential through e-bike substitution.

It is important to note that the data in this section is limited to journey to work trips, not other personal trips. While the CRD Origin Destination survey does record all personal trip types, it does not collect extensive demographic data, hence the use of the 2016 census journey to work data for this demographic analysis. This analysis therefore leaves out those who do not travel to work, including children, retirees, homemakers, and others in the community, along with trips made by all residents for non-work purposes. That being said, commuting constitutes a significant portion of all trips in Saanich, and therefore an analysis will still be informative despite these gaps.

Figure 6 shows journey to work by mode and age group in Saanich. There are currently more older adults (45 to 64) driving alone than in other age groups, as a result both of there being more people in this group than other age categories and also choosing to drive alone more frequently (67% of trips) than other age groups other than seniors (68% of trips). Notably, 10% of seniors reported using active transportation for commuting. E-bikes can make active transportation more accessible to older adults.

Figure 6: Commute mode by age group in Saanich, 2016 census

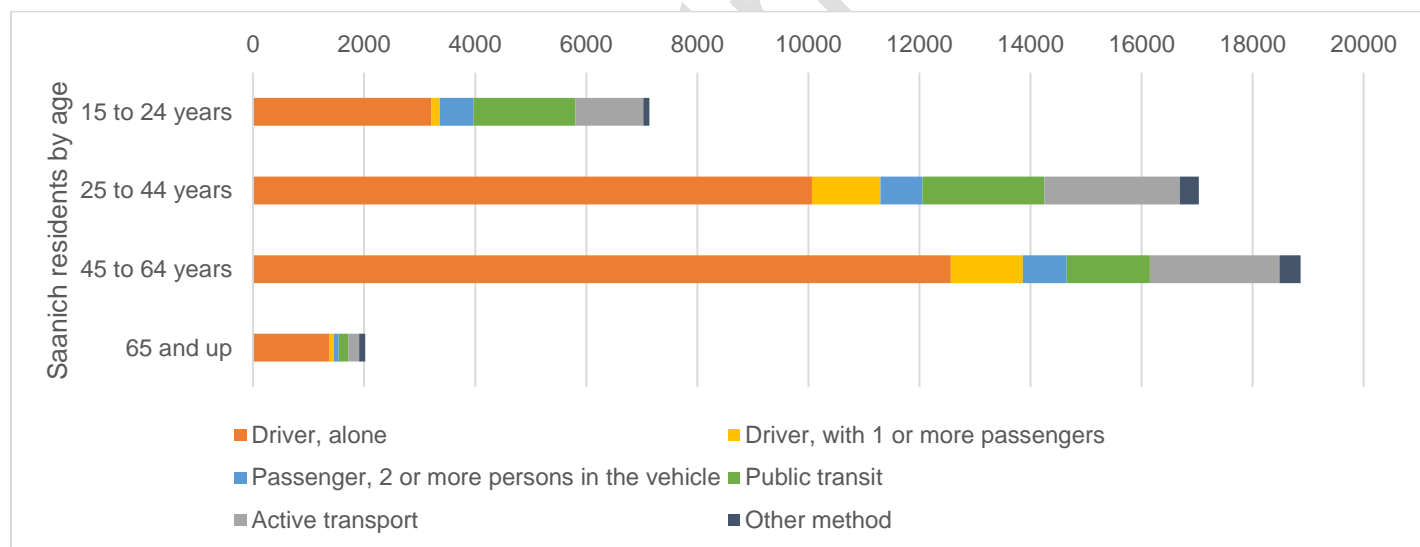


Figure 7 shows commute mode by median income. Public transit riders have the lowest median income, followed by passengers, active transportation, driver alone, other, and driver with passenger(s). This data indicates that lower income individuals and households are not necessarily the target audience for e-bikes to reduce GHG emission the most. However, a program that reaches lower income individuals and households may have important equity co-benefits, especially given the economic uncertainty brought on by COVID-19.

Figure 7: Commute mode by median income

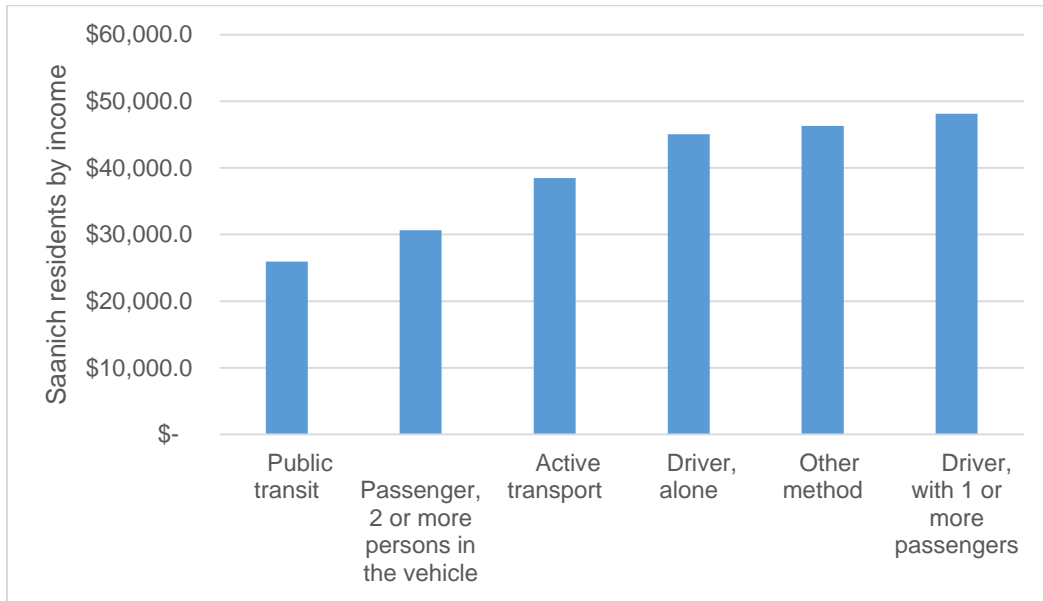
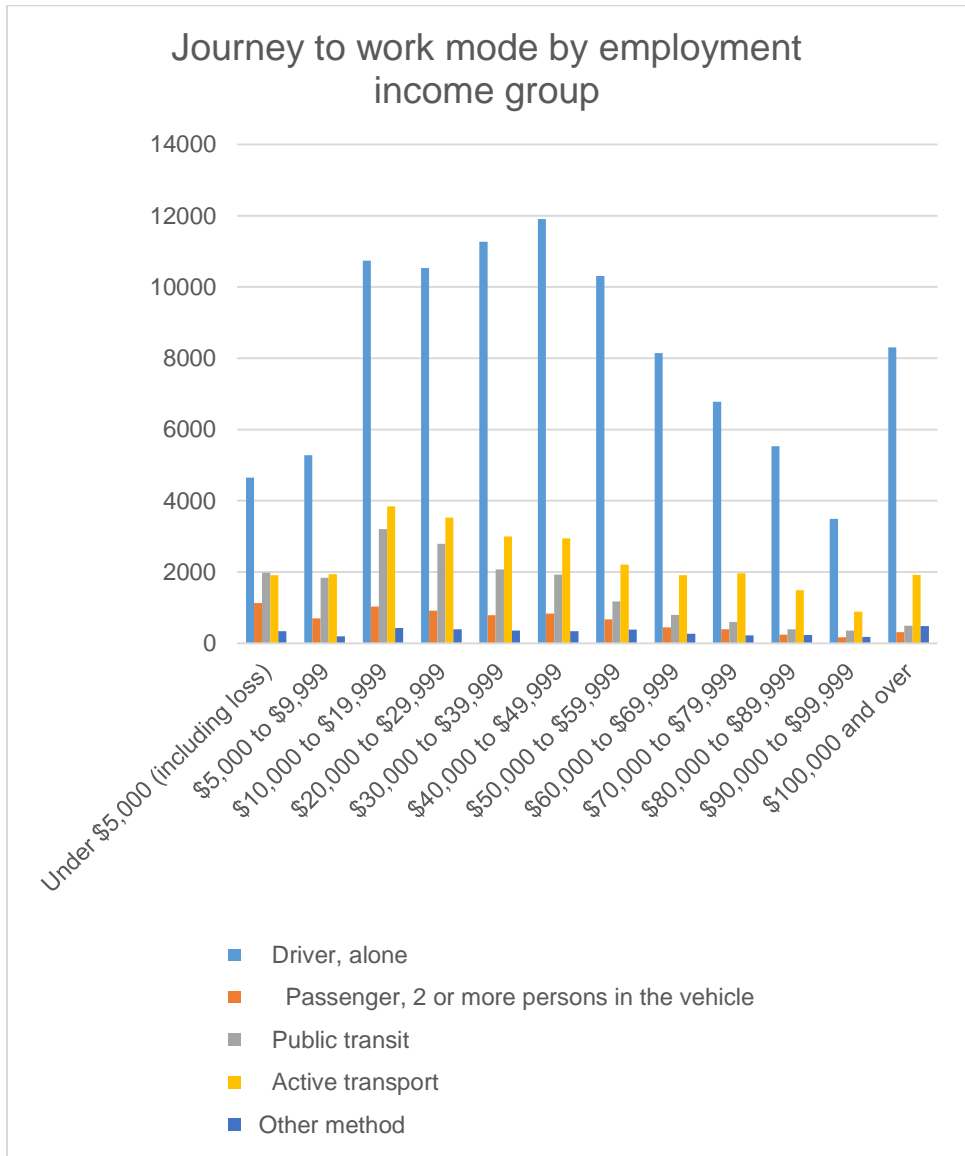


Figure 8 shows the journey to work modes used by different employment income groups. Driving is the primary mode for all income groups.

Figure 8: Journey to work mode by employment income group (2016 Census, Victoria CMA).



Figures 9 and 10 show the commute modes for women and men in Saanich (the 2016 survey did not record other genders). Driving is the most common mode of travel, followed by active transportation and public transportation in each case.

Figure 9: Commute modes for women in Saanich

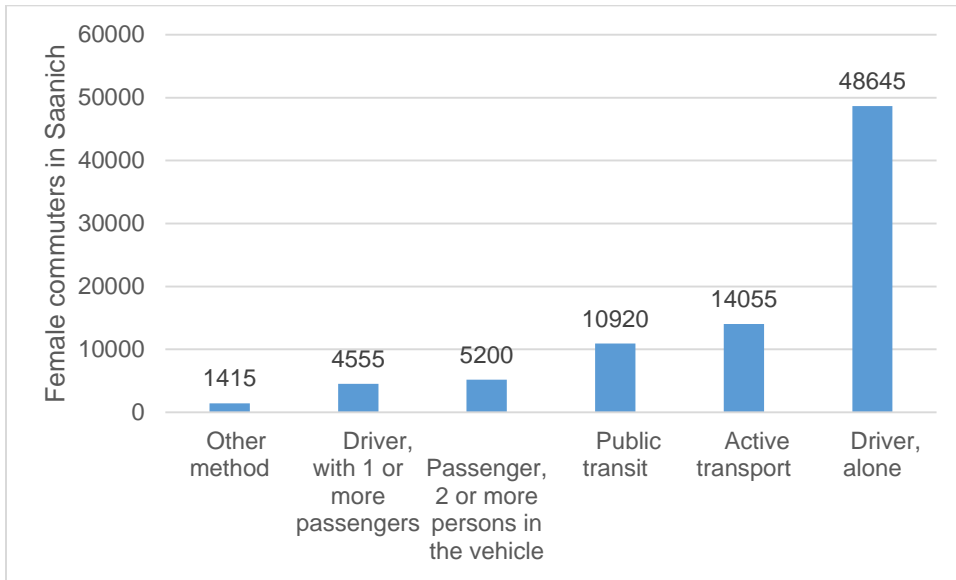
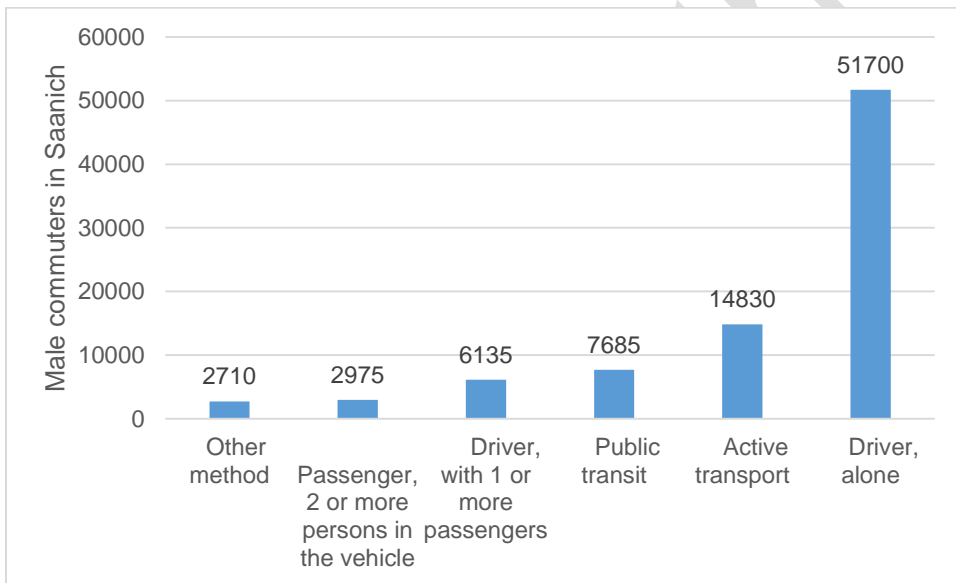


Figure 10: Commute modes for men in Saanich



As shown in Table 15, men were less likely to use public transportation than women, and were less likely to be a passenger in a vehicle than women were. Data on gender and e-bike adoption in Saanich is not available.

Table 15: Commute modes by gender (%)

	Active Transportation	Public Transit	Driving alone	Driving with passengers	Being a passenger
Women	17%	13%	57%	5%	6%
Men	17%	9%	60%	7%	3%

The census data did not make commute by ethnicity data available without custom request, so this information is not part of the analysis. However, 22% of Saanich’s population are racialized/visual minorities, and race and ethnicity are important considerations in our community.

The census does make commute by mode by Indigenous identity available, as shown in Table 16.

Table 16: Commute modes by Indigenous identity (%)

	Indigenous (First Nations, Metis, Inuit)	Non-Indigenous
Car, truck, van - as a driver	60%	69%
Car, truck, van - as a passenger	6%	5%
Public transit	20%	12%
Walked	8%	6%
Bicycle	5%	6%
Other method	2%	2%

Figure 11 shows commute mode (%) by immigration status in Greater Victoria Census Metropolitan Area (CMA) (the data was not available at the Saanich level). The “immigrants (all)” category includes the “recent immigrant” category.

Figure 11: Mode of commute (%) by immigration status in Greater Victoria CMA

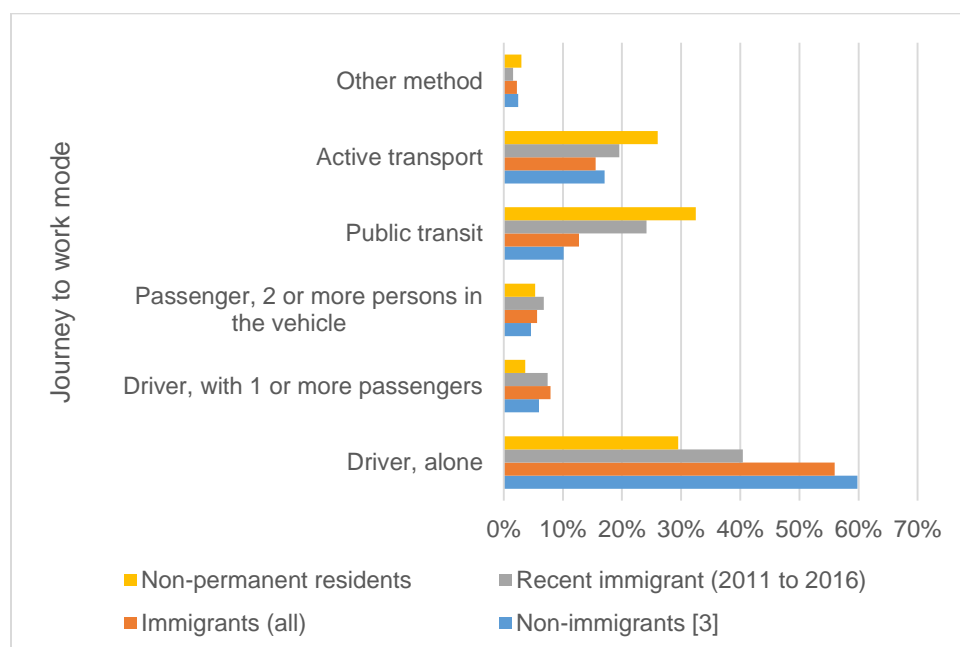


Table 17 shows that non-permanent residents (e.g. students, temporary foreign workers, refugee claimants, etc.) are the most likely to use active transportation of the groups in the table, followed by recent immigrants, with non-immigrants being the least likely category to choose active transportation. Note – this table does not include residents who immigrated prior to 2011, but that data is available from Statistics Canada.

Table 17: Mode of commute (%) by immigration status and gender

Main mode of commuting (10)	Recent immigrants (2011-2016)		Non-permanent residents		Non-immigrants	
	Women	Men	Women	Men	Women	Men
Driver, alone	35%	46%	25%	33%	59%	71%
Driver, with 1 or more passengers	5%	9%	3%	5%	11%	7%
Passenger, 2 or more persons in the vehicle	11%	2%	8%	3%	5%	4%
Public transit	27%	21%	37%	28%	12%	8%
Active transport	19%	21%	23%	29%	17%	17%
Other method	2%	1%	4%	2%	2%	3%

As Figure 12 shows, with only one small exception (management of companies or enterprises), residents of all occupations in Saanich use multiple modes for their commutes, meaning that e-bikes could be appropriate for commutes across different employment types.

Figure 12: Commute mode by occupation

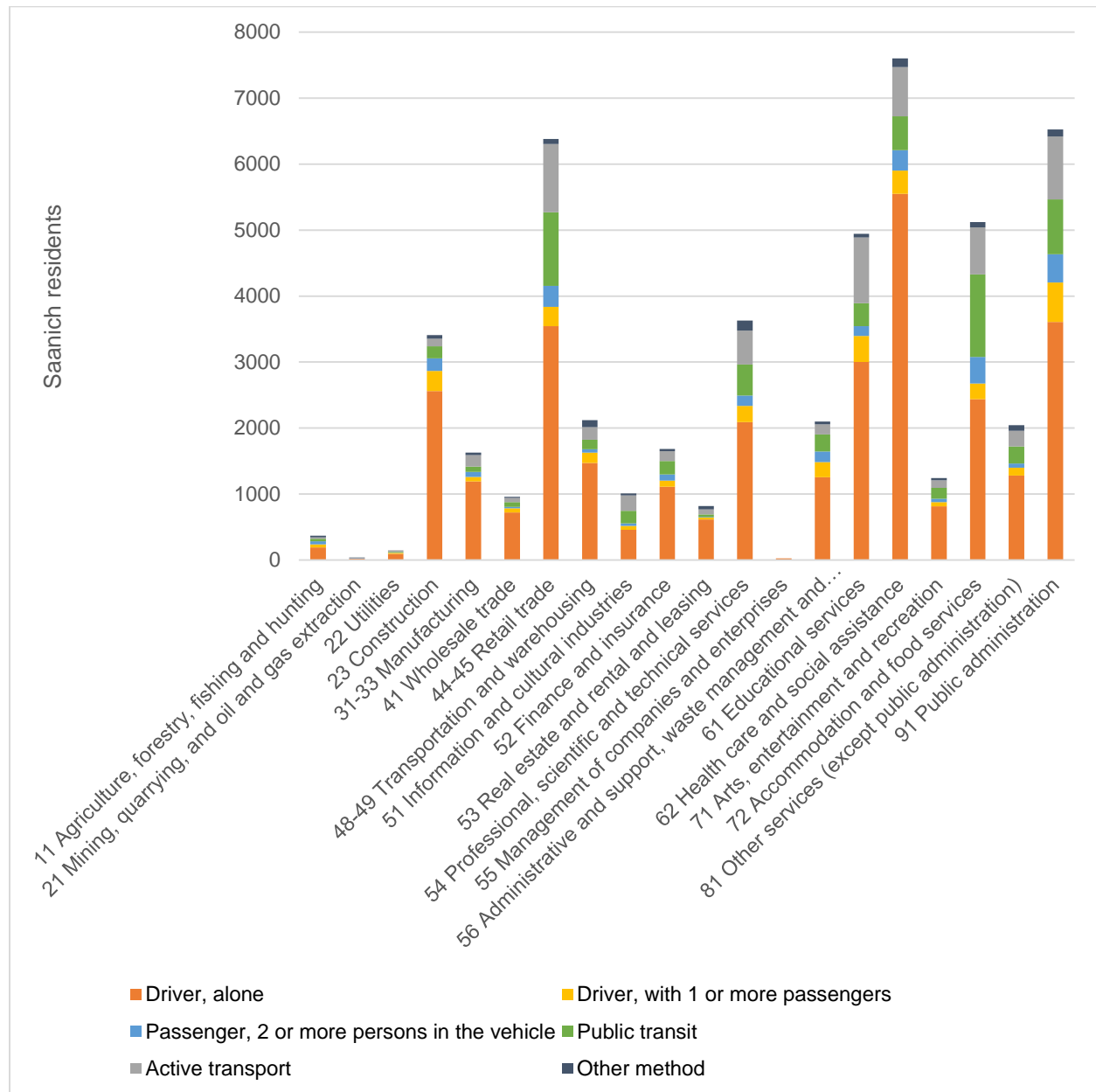


Table 18 shows the commute modes of the top 5 employment categories in Saanich. The majority of those in accommodations and food services commute to work by means other than single occupancy vehicles, while 73% of those who work in health care and social services drive to work alone.

Table 18: Commute mode by industry in Saanich

Industry - North American Industry Classification System (NAICS) 2012 (21)	Driver alone	Driver, with 1 or more passengers	Passenger, 2 or more persons in the vehicle	Public transit	Active transport	Other method
72 Accommodation and food services	48%	5%	8%	24%	14%	2%
91 Public administration	55%	9%	7%	13%	15%	2%
44-45 Retail trade	56%	5%	5%	17%	16%	1%
61 Educational services	61%	8%	3%	7%	20%	1%
62 Health care and social assistance	73%	5%	4%	7%	10%	2%

As Figures 13 through 16 show, most trips to work in Saanich are under 15km, with the most common distance to work being 3 to 4.9 km, well within the average e-bike range of 6 km (see best practices section for research on typical observed e-bike distance travelled).

Figure 13: Distance to work (km) for Saanich residents – all modes

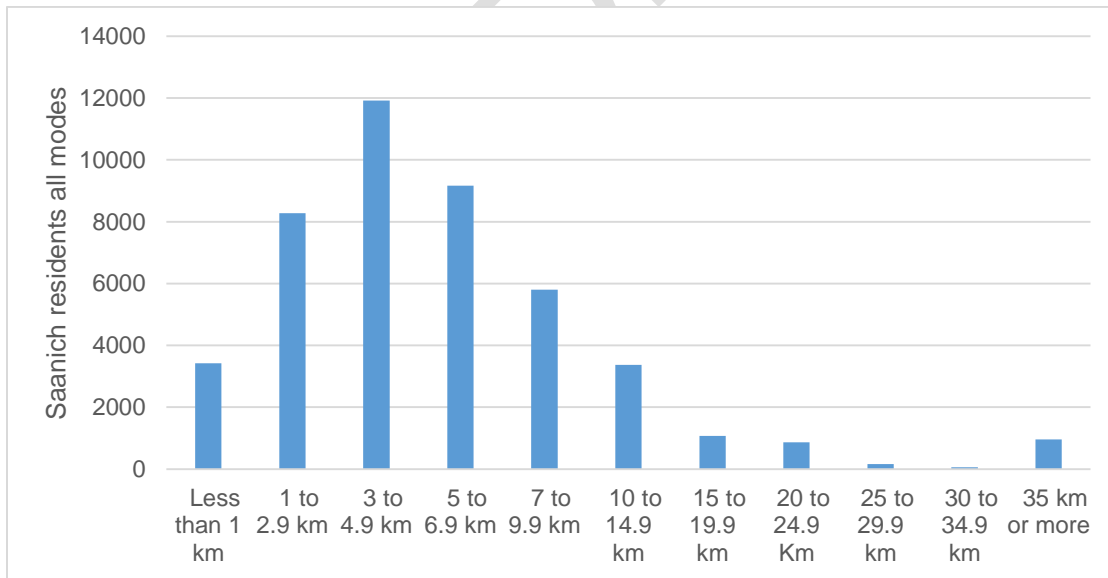


Figure 14: Distance to work (km) for driving alone mode

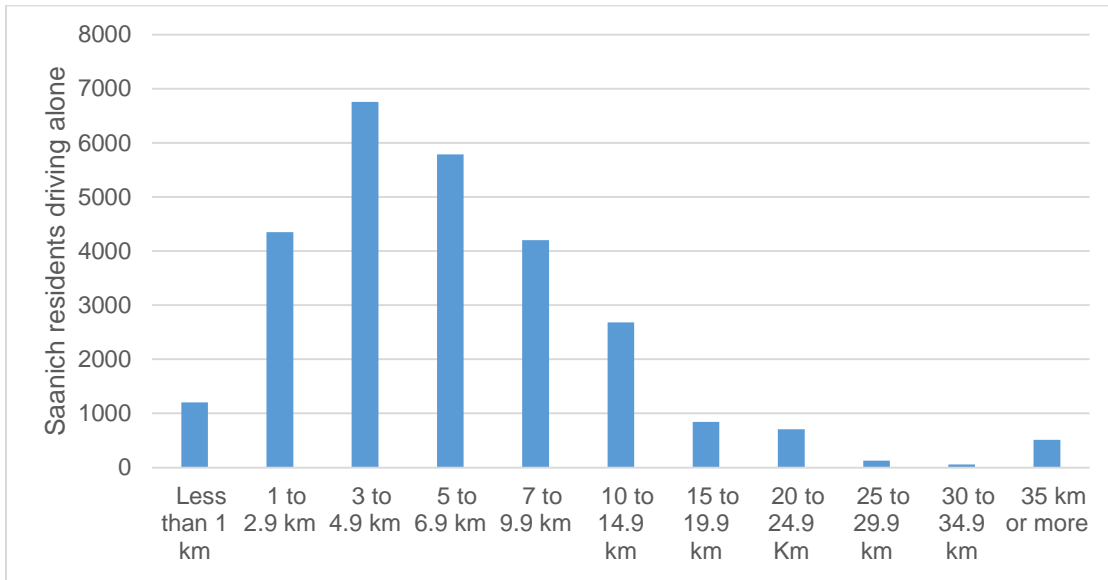


Figure 15: Distance to work (km) public transit mode

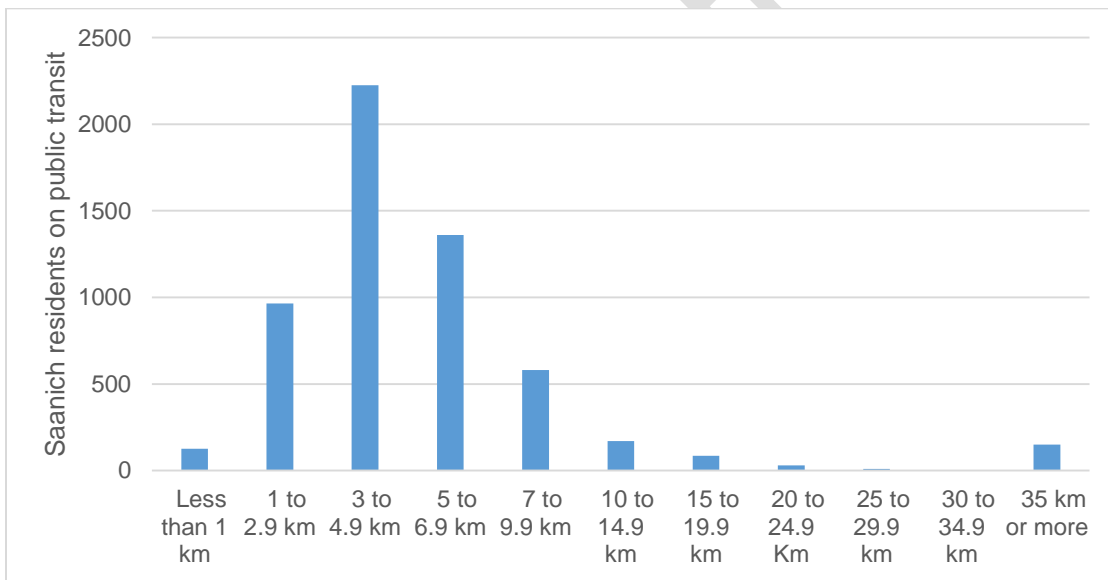
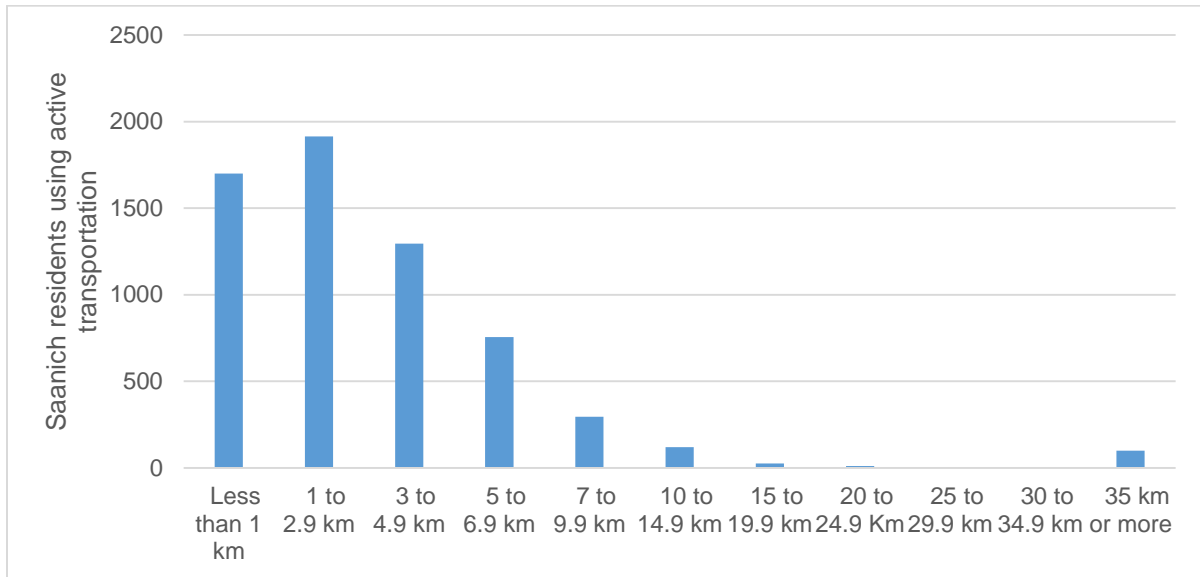


Figure 16: Distance to work (km) for active transportation users



Figures 17 and 18 show duration of commute by mode in minutes. Public transit is by far the mode with the longest average trip duration. While not necessarily delivering a climate benefit, switching from transit to e-bikes for those who can do so may deliver significant time savings, which could be an equity benefit. Switching from a single occupancy vehicle trip to an e-bike trip, given the typical short distances travelled, may not result in much or any time penalty, potentially helping with e-bike adoption among drivers.

Figure 17: Average duration of commute (minutes) by mode

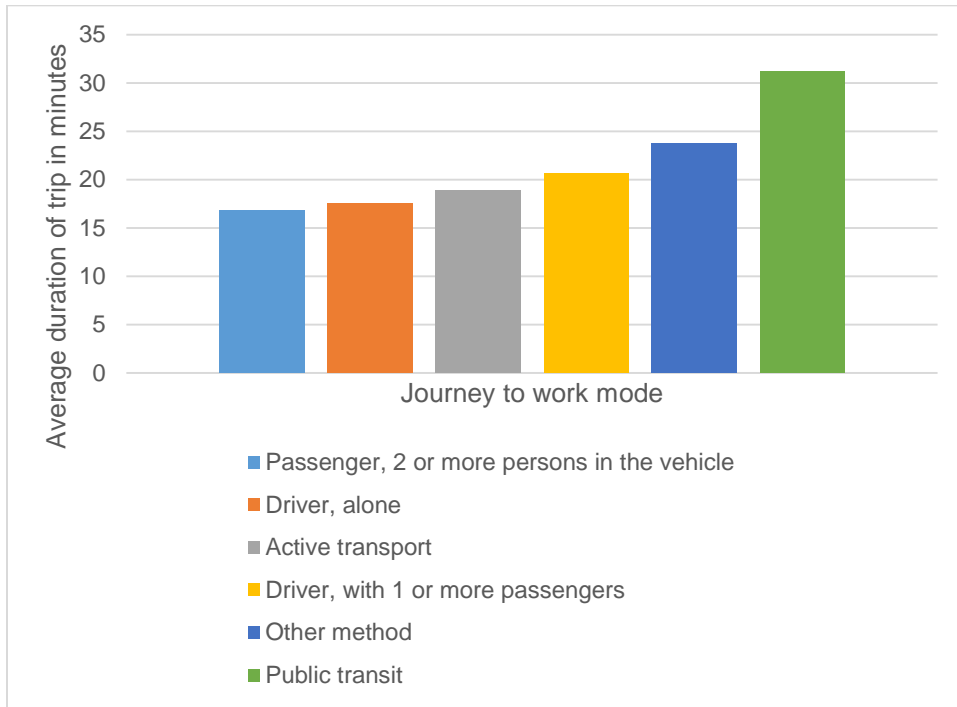
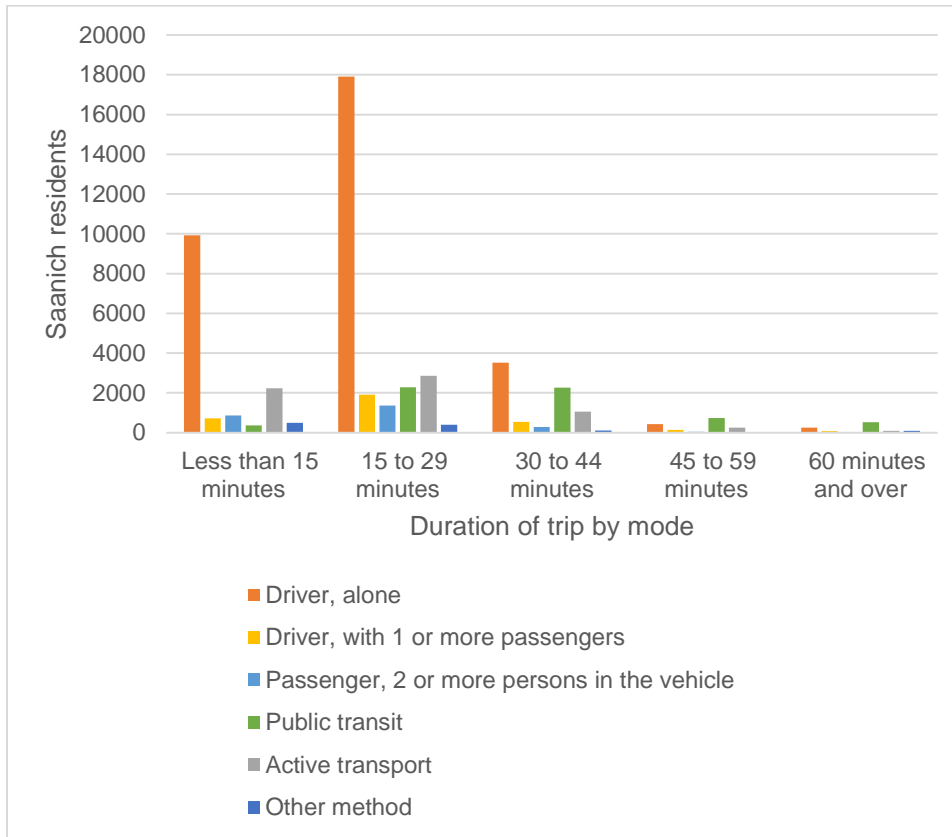


Figure 18: Duration of commute (minutes) by mode for Saanich residents



A1.7 Costs of different modes

According to the CRD's Housing and Transportation Cost Estimate Study (CRD, 2020), the average transportation cost in Saanich was \$6,156 per person and \$12,294 per household.

After housing, transportation is typically one of the most significant costs for Saanich residents. Different transportation choices have very different costs, as outlined in Table 19. E-bikes are more expensive than regular bicycles on an annual basis but are able to replace more trips and sometimes can replace a family vehicle, so are very cost competitive compared to vehicle ownership if they replace a vehicle.

Table 19: Annualized costs by mode

Mode	Depreciation and fixed costs	Variable costs (e.g. gasoline, electricity)	Total annualized costs	Notes
Public transit	\$1,020 or less	n/a	\$1,020 or less	Monthly bus pass costs \$85. Many programs exist to decrease these costs for target audiences.
Bicycle	\$350 and up*	n/a	\$350 and up	Includes depreciation, maintenance, and gear.
E-bike	\$1332	\$10	\$1,342	Includes depreciation (new battery), maintenance, and gear.
Carshare	n/a if membership type has no admin fees	\$700	\$700	Average cost provided by Modo. Carshare members likely also have other transportation costs such as cycling and transit use, and supplement these main modes with occasional carshare use.
Vehicle	\$6,300*	\$767 (\$0.14 per km* driving 5475km/year)	\$7,067	Includes insurance, license and registration fees, sales taxes, depreciation, fuel, maintenance, and tire wear.

*As reported in the CRD's Housing and Transportation Cost Estimate (CRD, 2020).

The CRD's Housing and Transportation Cost Estimate Study shared the following key findings about transportation costs in the region:

- Higher transportation costs are largely a product of vehicle ownership.
- Regardless of level of use, the fixed costs of vehicle ownership are significant.
- The number of vehicles owned has a proportionate impact on transportation costs.
- Transportation costs tend to be lower in geographies where a broader choice of transportation options are available and where density and mixed use development is prevalent as it is in Victoria, southern Saanich and Sidney.
- Transportation costs tend to be higher in areas where households depend on personal vehicle use in order to access services and employment opportunities.
- Vehicular ownership rates are generally lower in more mixed use walkable centres such as Sidney and the core of Victoria.
- Transportation choice provides more potential for savings at a household level.
- Some households may benefit from transportation cost savings by choosing to live in well serviced areas of the region where there is more ready access to services and employment opportunities, and less demand for personal vehicle usage.

These data indicate the best cost savings for a household come from reducing vehicle ownership rather than replacing some car trips with e-bike trips while still paying for the vehicle. That being said, e-bikes are not always the best transportation choice (e.g. icy conditions, transporting multiple adults, physical injury, etc.). Engagement could inquire what backup modes would be deemed acceptable and/or affordable to encourage e-bike adoption by households in Saanich (e.g. bus tickets, car share hours, or another vehicle in the household that is shared etc.).

Not for Distribution

Appendix 2: Review of existing e-bike programs

Multiple e-bike program design options were identified through reviewing academic literature (Aono & Bigazzi, 2019), other municipal programs, and community partner research (Community Social Planning Council, 2020) and are summarized in Table 20.

E-bike program approaches in the review included:

- Purchase grants or rebates
- Financing programs
- Short term sharing programs
- Longer term trial programs
- Combination programs

Spotlight on a Local Bike Share Pilot

In October 2017, a private bike share company, U-Bicycle, piloted services in the District of Saanich and other core communities within Greater Victoria. The pilot included 500 bikes equipped with GPS and self-activating locks operated with a smart phone app. Users would create an account by providing a \$50 deposit and paying \$1/half hour of using the bike. Initially, the system was “dockless,” relying on the app to help users find available bikes. In 2018, the program piloted “virtual parking” or “virtual docks” to better manage parking, which had resulted in many complaints when bikes were left on private property or impeded accessibility for those using mobility aids. Local bike rental companies with brick and mortar operations were critical of the model, stating that the U-bicycle pilot unfairly benefitted from using public space for private gain. Many bikes were stolen or vandalized, including removing the locking and GPS devices. Data on uptake and usage of the bikes by paying customers was not made available to the District, so mode shift data cannot be analysed. However, it is clear that the bike share model, with either dockless or virtual dock approach, does not provide reliable access to bicycles for regular commuting and other transportation needs in our rural and suburban community. Ultimately, U-bicycle pulled out of providing bike share services in Greater Victoria. Based on this experience, we believe that the bike share model is not the right approach to encourage widespread adoption of e-bikes for regular transportation use in our community in order to reduce greenhouse gas emissions through trip substitution.

Table 20: Examples of e-bike programs

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
Grants or Rebates						
SCRAP-IT Program	BC-wide	Non-profit organization, funded by selling carbon credits for offsets and a small fee from participating bike vendors, with government top up incentives.	BC residents with older vehicles	\$1050 for an e-bike	Must trade in a qualifying older vehicle.	Program has given out approximately 500 incentives between June 2017 and September 2020.
E-bike Rebate Program	Los Angeles, United States	Bike San Gabriel Valley (cycling coalition) and City of El Monte	Residents within three miles of a particular freeway	\$700 prize draw for those who entered by purchasing an e-bike	Required to take a three hour cycling safety class to be eligible for the rebate.	Popular program ended with wait list of interested residents, but does not seem to be currently in operation.
Electric Ride (E-Ride) Program	Austin, Texas	Austin Energy and City of Austin	Residents	\$50-\$300 rebates that increase with the sale price of the e-bike	Up to 3 rebates per person per year	Program is ongoing, has many participating vendors, and is very popular during the pandemic. Organizers report that the rebate assists with education and awareness, as the rebate amount is rather small compared to the cost of some e-bikes.
Grants for Electric Cargo Bikes	Oslo (Norway)	Unknown	Those affected by the ban on diesel vehicles	25% of the e-cargo bike purchase cost up to \$1200		Some concerns that the rebates help wealthy people more than those with fewer funds.

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
Electric Vehicle Charger and E-Bike Rebate Program	Edmonton, AB	City of Edmonton	Residents	Lower of \$750 or 30% of purchase price (before tax) with a cap of one per residence. Must purchase first and apply for rebate.	Allowed retroactive rebates.	Fully subscribed quickly, and cancelled by Council after COVID pandemic – seen as a “overly generous” rebate compared to incentive for e-car charging (\$600 for existing residential level 2 installations).
Financing Programs						
Vancity Clean Air Vehicle Loans	Vancity service areas within British Columbia	Vancity Credit Union	Vancity members	Vancity Prime+2% minimum loan of \$3,000 for a period of up to 10 years	Qualifying e-bikes determined by the loan provider. The loan may be secured before or after purchase.	Vancity does not track and report data regionally or based on the type of vehicle that receives a loan.
PayBright financing	Canada	Private business	Customers	Instant consumer financing at the point of sale, monthly payments. Interest rate not available.	Merchants receive their funds up front.	Local uptake numbers for this financing was not available to the District.
Nelson E-bike Program	Nelson, BC	Nelson Hydro and the City of Nelson	City homeowners (owner occupied homes), not renters, as the City secures the loan using home.	Up to \$8000/ household (can be used for more than one bike), 2 or 5 year amortization, 3.5% interest (floating rate). Applied on Nelson Hydro bill.	Lump payments allowed. For e-bikes, conversion kits, and non-electric bikes, new or used. Participants encouraged to shop local, online allowed.	40 e-bike loans approved between July and mid-September (2.5 months), in contrast with 70 home retrofit loans approved over a 2 year period.

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
E-bike share programs						
Summit Bike Share	Park City, Utah	Summit Count, Park City, Utah Transit Authority	Residents and visitors near major transit stations and city centre	Mobile app e-bike share, docking stations provide charging. \$3/ride per bike with docking required every 30 minutes for a pay per ride pass.	Fee rates differ by membership types. Shares usage data publicly	Launched in 2017, expanded and operating today.
City Bike	Stockholm, Sweden	City of Stockholm and JCDecaux SA, a worldwide outdoor advertising company	Residents and visitors	Dockless e-bike share	Users of the bike share bring their own battery and are responsible for charging it.	Unknown
U-bike Program	Saanich and Victoria	U-bike (a private company)	Residents and visitors	Access to a bicycle for short rental terms. \$50 initial fee plus cost per half hour until bike is returned.	U-bike was a “dockless” program that used smart phone app to locate bicycles. While not an e-bike program, we do have local experience with this pilot).	The program was not continued after the trial period.

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
Short and long term trial programs						
Journey Matters Bike Scheme	Rotherham, England	Local Councils, and two non-profit organizations	Residents	Free e-bikes, bike lights, a bike lock and helmet for up to three months. Maintenance and training also provided.	Range of bikes available	35% of participants purchased an e-bike as a result of participating in the program. Some participants could not afford to buy the ebikes after the “try-before-you-buy” period was over.
E-bike Lending Library	Vancouver, BC	Momentum Magazine, ABUS locks, and local e-bike manufacturers	Residents	For \$100, rent an e-bike for up to two weeks.	A range of e-bikes allows interested riders to explore which best suits their lifestyle.	The program has ended, and data has not been available about the results of the program.
Electric bike pilot project	Montreal, QC	City of Montreal and e-bike manufacturer Velo-Transit	Vehicle-commuting employees of local businesses	For \$25, trial an e-bike for 2 weeks.	Project built charging facilities at the workplace. After the pilot period, users would need to cover the costs of owning and operating the e-bike if they wanted to continue using it.	Unknown

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
Local Motion e-bike lending library	Vermont	Non-profit (Local Motion), hosted variously by libraries, energy committees, recreation centres, and volunteers. Funded mainly by Regional Planning Commission and state transportation authority, with support from local electric utility.	Vermont residents	Many types of e-bikes (e.g. cargo longtail with optional child seats or front bucket cargo, road bikes, trail bikes, and conversion kit hybrids) are available. They can be booked online and borrowed for a week at a time.	Length of loans varied from 1 day to 6 days.	The Burlington Lending Library has 5 e-bikes that in the 2019 season were loaned out a total of 105 times for loan periods of 6 days. Participants rated the helpfulness of the lending library at 8.7/10 for determining how e-bikes work and how they fit into their lifestyle. 17% of participants purchased an e-bike within 12 months of e-bike loan. An additional 63% of participants expected to purchase an e-bike within 1-2 years of e-bike loan.
Demo on Demand	Greater Victoria, BC	Oak Bay bikes (note - many local bike stores provide test rides. This program is provided as one example, not as an endorsement of one bike store program.	Potential e-bike buyers	Free delivery and pick up of the e-bike fleet carried by the bike store for approximately 3 days.	“The best way to sell an e-bike is to get someone to ride it.”	Program is still running during the pandemic as it’s seen by the bike store as an important way to overcome the perceived cost barrier.

Program Name	Location	Program Delivery by	Audience	Offer	Other	Result
Multi-modal support						
CarShare membership	Burlington, Vermont	Utility (Burlington Electric Department) with support from non-profit (CarShare Vermont)	Burlington residents who purchase e-bikes through the incentive program.	\$50 towards membership with non-profit car share organization (one year fee)		Low uptake of the carshare membership offer among e-bike incentive program participants, but may be due to promotion issues rather than the offer itself being not of interest to potential car share users.
Combination programs						
Burlington Electric Department E-bike program	Burlington, Vermont	Utility (Burlington Electric Department) in partnership with nonprofits (Local Motion, V-bike, CarShare Vermont) and local bike stores.	Vermont residents (individuals and households), businesses, and bike shops	E-bike fleet lending library, \$200 rebates at local bike stores, \$50 annual membership to non-profit car share organization, and free consultation/advice through V-Bike non-profit.	Equity components are being added, including looking into bike lockers for safer storage for low income renters in apartments.	Program administrator believes that “doing one without the other is less meaningful” in terms of choosing one approach over another

Appendix 3: Review of existing income-qualified programs

Increasingly, municipalities are incorporating or centering equity in climate planning and implementation. The Saanich Climate Plan defines equity as working towards the just distribution of the benefits of climate actions (mitigation and adaptation) and alleviating unequal burdens created or worsened by climate change.”

The Climate Plan commits to the following aspects of equity:

- **Procedural (Inclusion):** Inclusive, accessible, authentic engagement and representation in the process to develop or implement programs or policies.
- **Distributional (Access):** Programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need.
- **Structural:** Decision-makers institutionalize accountability; decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
- **Transgenerational:** Decisions consider generational impacts and do not result in unfair burdens on future generations.

While no e-bike specific equity programs were found, there are some examples of equity-centering climate programs that could be applied. Table 21 outlines climate or other municipal programs that include income-qualified offers.

Table 21 Income-qualified climate or municipal program examples

Program	Delivery by	Audience	Offer	Other	Results
Clean Vehicle Rebate	Center for Sustainable Energy (CSE) for the California Air Resources Board (CARB). CARB is a part of the California Environmental Protection Agency (CalEPA)	California residents purchasing electric vehicles with incomes less than or equal to 300% of the federal poverty level.	Provides higher rebate amounts for EVs for those who are income qualified.	Live statistics are available at https://cleanvehiclerebate.org/eng/rebate-statistics .	Participation in the program has been growing steadily since 2011.
Charge Ahead Rebate	Center for Sustainable energy and the Oregon Department of Environmental Quality	Low and mid income households in Oregon	Households with income less than 120% of the area median income for the closest metropolitan statistical area are eligible for a \$2,500 rebate for purchased or leased new or used battery electric vehicles.	Qualifying households also have access to the EV rebates available in the state without income qualification.	Has been in place since 2018 and is still offered today.
Leisure Involvement for Everyone (L.I.F.E.) Program	District of Saanich, Greater Victoria Active Communities (GVAC)	Individuals and families living on a low income	Subsidies to access recreation services and programs at Saanich recreation centres, including discount coupons, drop-in admissions, and discounted memberships.	Updated eligibility criteria due to the pandemic.	Reaches 25% of low income residents in the region. 52 visit free admissions pass seen as very valuable by 82% of survey respondents and regional annual pass at 50% of cost seen as very valuable only by 36% of respondents.

Program	Delivery by	Audience	Offer	Other	Results
BC Transit Ticket Assistance Program	Community Social Planning Council, qualifying local agencies, BC Transit Commission	People in low income in the Capital Region	Local agencies purchase tickets and passes through CSPC, which are matched one to one with free tickets from the Transit Commission. Tickets are distributed by agencies for free to those in need.	Agencies, CSPC, and BC Transit meet annual to review transportation needs of people in low income in the region.	Helps people meet basic transportation needs and participate in community life This program is fully subscribed and does not meet the full demand for the program.
Empower Me	Social enterprise Kambo Energy Group with Provincial, utility, and municipal partners.	Empower Me focuses on newcomers to Canada by delivering free programming and education to save energy, save money, save the environment, and increase the comfort and safety of their homes.	Workshops, personalized retrofit advice, and education about available rebates for home retrofits.	The Empower Me Program is currently available in 16 languages including English, Mandarin, Cantonese, Punjabi, Farsi, Urdu, Hindi, Tagalog, Arabic, Spanish and Korean.	14,000 tonnes CO2e avoided and 87 living wage jobs created for new Canadians.
EV-sharing Pilot	Non-profits, Metropolitan Area Planning Council (MAPC), Eversource (a utility company), and the City of Boston.	Low income and market-rate subscribers in Roxbury.	Income-tiered EV car sharing program	"It provides an introduction to clean, quiet EV technology for those who have an interest in electric vehicles but are yet not ready to purchase one."	TBD. Still in development, set to launch this winter.

Appendix 4: Comparison of e-bike program types

In Appendix 2, a number of e-bike program examples were reviewed of the following types.

- Purchase grants or rebates
- Financing programs
- Short term sharing programs
- Longer term trial programs
- Combination programs

Some of these program types may be more appropriate for the current Saanich context than others.

A4.1 Purchase grants or rebates

A 2017 survey of industry stakeholders on e-bike adoption in BC included the recommendation that e-bike incentive programs be adopted to address cost barriers; incentives could take the form of sales tax reductions or exemptions, retail discounts, rebates, or inclusion of e-bikes in commuter benefit programs (Watt Consulting Group).

A UBC report commissioned by the City of Victoria on options for e-bike incentive program design also recommended creating a municipal rebate program and monitoring and evaluating results (Aono, Bigazzi, Berjisan).

A4.2 Financing programs

While the overall cost to the rider is higher than with a grant or rebate program, financing spreads out payments, adding interest payments and debt burden while avoiding one large lump sum payment. The need for financing for e-bikes is not yet understood.

A4.3 E-bike share programs

Short term bike share programs allow riders to try out e-bikes, and they also provide a multi-modal transportation option in bikeable areas without riders needing to commit to full time ownership of an e-bike. Rather than taking a bike home to use for a few days, as in a trial period, e-bike shares are usually used for a single trip within an urban area, with a pay by minute/hour rental fee.

Education programs have proven to be an effective way to support e-bike adoption, particularly rental/demo programs. A recent study has shown that those who were given access to an e-bike had much higher willingness to pay for one, and people showed greater willingness to pay for e-bikes once their knowledge of them improved (Aslak Fyhri, 2017). An e-bike share program is a form of education and awareness raising given participants can access an e-bike without committing to purchasing one. However, e-bike share programs generally cost money (usually through registration with an organization through an app) and provide less control over the type of e-bike, its upkeep and the availability of panniers, child seats and helmets etc.

A4.4 Multi-modal support

An e-bike can replace many vehicle trips, but not all trips. Therefore, an e-bike rider will need to have access to other transportation options from time to time. Some e-bike incentive programs provide multi-modal support to encourage e-bike use.

A4.5 Combination programs

Combining many of the above approaches into a wrap-around program incorporating information, trial, rebate, financing, and multi-modal support may result in greater uptake than programs that only incorporate one approach.

A4.6 Program type recommendation

Table 22 compares e-bike program types and makes recommendations for the type of program for the District of Saanich to take to detailed program design.

Table 22: E-bike program types comparison

Program type	Pros	Cons	Recommendation
Rebates	<ul style="list-style-type: none"> Addresses main reported barrier to e-bike adoption. Raises awareness of e-bikes 	<ul style="list-style-type: none"> Higher cost program for Saanich May not be accessible to lower income households depending on design. 	Highest priority option. Recommended for detailed program design.
Financing programs	<ul style="list-style-type: none"> Lower cost program for Saanich Raises awareness of e-bikes 	<ul style="list-style-type: none"> Not simple to offer as a municipality Already on offer to Saanich residents from multiple private lenders. 	Not recommended.
E-bike Share programs	<ul style="list-style-type: none"> Allows trial of e-bikes at a low cost without commitment of purchasing one. Raises awareness of e-bikes Lower cost program for Saanich 	<ul style="list-style-type: none"> Previous bike share trial not successful in Saanich. Sharing of helmets or requirement to carry one is a disincentive to use. 	Not recommended
E-bike trial programs	<ul style="list-style-type: none"> Allows trial of e-bikes for free without 	<ul style="list-style-type: none"> Already somewhat available locally (e.g. 	Could be a complementary program from another entity.

	<p>commitment of purchasing one.</p> <ul style="list-style-type: none"> • Raises awareness of e-bikes • Increases likelihood of e-bike purchase by those who will use them frequently. • Lower cost program for Saanich 	<p>Oak Bay Bikes “demo on demand”).</p>	<p>May not be a need at our point on the adoption/availability curve of new technology, or the most important role for a local government.</p> <p>Raising awareness of the existing trial programs from local bike stores and encouraging other regional bike stores to provide trial programs may be acceptable alternatives.</p>
<p>Multi-modal support</p>	<ul style="list-style-type: none"> • May support “shedding” of vehicle ownership more than an e-bike program without multi-modal support. 	<ul style="list-style-type: none"> • Complexity and cost. • Data currently lacking on multi-modal needs of e-bike owners 	<p>Not recommended at this time. May be considered in the future if need can be demonstrated.</p>
<p>Combination programs</p>	<ul style="list-style-type: none"> • Wrap around service provides education, trialing, rebates, financing, and other support in one place. Addresses many barriers. 	<ul style="list-style-type: none"> • More costly and complex than single approach program. • Requires many partners administering multiple established programs 	<p>Not recommended at this time. May be considered in the future if need can be demonstrated.</p>

Appendix 5: E-bike incentive program design options and recommendations

An e-bike incentive program may take many forms. The following document outlines design options and makes recommendations for the Saanich E-bike Incentive Program

A5.1 Relation to other incentive programs

- Standalone
- Top up of other rebate program (e.g. BC-wide SCRAP-IT program)

A standalone program incurs more administration costs than topping up an existing rebate program, but allows the program to be designed specifically to meet Saanich's goals.

The current SCRAP-IT program is designed to take a low-efficiency ICE vehicle off the road and replace it with an e-bike, which serves to promote more guaranteed GHG savings, but reduces a large number of potential e-bike riders among Saanich residents to a small pool of those who both qualify for SCRAP-IT and who choose an e-bike from the SCRAP-IT options.

Studies show that those who purchase e-bikes use them to replace car trips even when they still own a vehicle, so proof of scrapping a vehicle is not needed to achieve GHG emission reductions. Collection of feedback as part of the e-bike incentive program pilot would provide additional data to demonstrate the extent to which e-bikes replace car trips locally. Similar information will also be collected as part of the CRD Origin-Destination Survey in 2022.

Those who qualify for the SCRAP-IT program could also be eligible for the Saanich rebate, rather than having to choose one or the other.

Recommendation:

A standalone program is the preferred option in order to reach a broader audience than the SCRAP-IT program, to incorporate equity in design, and to study the impacts of the program.

A5.2 Jurisdiction

- District of Saanich only
- Regional program
- Other

While the City of Victoria has investigated an e-bike incentive program, it is not currently a priority in their workplan.

The Capital Regional District is developing a climate action strategy in early 2021. If there was interest among the member municipalities and support from the CRD board, an e-bike incentive program could be included in the list of potential actions. However, this is not currently identified in their workplan for 2021.

The District of Saanich could pilot an incentive program, share results, and if results suggest the program has promise at a regional level, that could be pursued with all relevant parties.

Recommendations

The preferred option is to pilot the program at the District of Saanich only, in order to deliver on Climate Plan actions in a timely manner, and to share findings which may result in program being taken up by other governments at a later date.

A5.3 Eligibility requirements

A5.3.1 Eligibility of riders

- Residency
- Age
- How many per person? Per household?
- For personal use vs. commercial use?
- Must complete bike safety skills training program first?
- Must complete trial rental period first?
- Must confirm secure, covered overnight parking space for e-bike?

Some rebate programs restrict e-bike rebates to one per person, and some restrict one per household. It is uncertain the impact on trip substitution in households with two or more adults if only one e-bike is available per household vs. when all interested adults have their own e-bike.

Statistics Canada uses the following definitions for people living in the same dwelling:

Household	Census family	Economic family
<p>“A person or group of persons who occupy the same dwelling and do not have a usual place of residence elsewhere in Canada or abroad. The dwelling may be either a collective dwelling or a private dwelling. The household may consist of a family group such as a census family, of two or more families sharing a dwelling, of a group of unrelated persons or of a person living alone. Household members who are temporarily absent on reference day are considered part of their usual household.”</p>	<p>“A married couple and the children, if any, of either and/or both spouses; a couple living common law and the children, if any, of either and/or both partners; or a lone parent of any marital status with at least one child living in the same dwelling and that child or those children. All members of a particular census family live in the same dwelling. A couple may be of opposite or same sex. Children may be children by birth, marriage, common-law union or adoption regardless of their age or marital status as long as they live in the dwelling and do not have their own married spouse, common-law partner or child living in the dwelling. Grandchildren living with their</p>	<p>“A group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law union, adoption or a foster relationship. A couple may be of opposite or same sex. By definition, all persons who are members of a census family are also members of an economic family. Examples of the broader concept of economic family include the following: two co-resident census families who are related to one another are considered one economic family; co-resident siblings who are not members of a census family are considered as one economic family; and, nieces or nephews living with aunts or uncles are</p>

	grandparent(s) but with no parents present also constitute a census family.”	considered one economic family.”
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The availability of an e-bike within a household will increase the opportunity for other members of the household to try the e-bike. This increases awareness and the potential for a second e-bike to be purchased to offset vehicles trips should it be necessary and appropriate in that household. It also ensures that incentive funding can be spread among more households in Saanich, sharing the benefits of the program more broadly. It may be seen as penalizing non-family household members such as roommates at the same civic address.

Requiring taking a bike safety skills course may be logistically challenging, but the training courses could be promoted and encouraged to participants. Further, a voucher towards the cost of a bike safety skills course could be included in the rebate program.

A trial or rental period may be logistically challenging to require, but many local bike stores do provide options to test drive e-bikes before purchasing.

Recommendations

Rebates must go to residents of Saanich, as the program is aimed at reducing GHG emissions from private transportation by Saanich residents. There is no need for a minimum time period of residency requirement, and there is no need to restrict eligibility based on tenure type (e.g. renters, freehold owners, strata), although it should be strongly recommended that participants have a covered secure place to store and lock their e-bike at night at home.

E-bike riders must be 16 or older in BC, according to the Motor Vehicle Act.

One rebate per household can be piloted and reviewed for future programs based on survey findings about trip substitution.

The District may only distribute incentives to residents for personal transportation, not to businesses for business fleets, per the Local Government Act.

The program can provide a discount for bike safety skills courses to those who participate in the program.

A trial period will not be required.

A5.3.2 Eligibility of bikes:

- Motor Vehicle Act
- ICBC
- E-bike typologies, brands
- Minimum e-bike price
- Conversion kits?
- Used e-bikes?
- Sold only from local bike stores? Regional bike stores? BC bike stores? Online?

The BC Motor Vehicle Act [Motor Assisted Cycle Regulation](#) defines, in part, an e-bike as having an electric motor with power ratings below 500 watts, no more than 3 wheels, and not capable of propelling the cycle faster than 32 km/hr. on level ground.

[According to ICBC](#), to operate an e-bike, or motor-assisted vehicle a person must be 16yrs or older and wear a bicycle helmet. A drivers licence, registration, or insurance are not required.

The e-bike typologies (cargo, cruiser, road, fat, folding, etc.) could all be eligible for rebates, as they can all be used to substitute for vehicle trips, and the wide variety of typologies can appeal to a wide audience.

In order to reliably reduce GHGs, e-bikes should be able to be maintained regularly at local bike stores, and be able to be ridden for many years rather than becoming e-waste after a short period of time.

A minimum price can be used to exclude e-bikes that are difficult to maintain and have a short lifespan due to lower quality components. This figure may be difficult to arrive at and may fluctuate with market conditions. The UBC study for Victoria recommended a minimum price of \$500. Another limit could be that the bike cost must exceed the value of the incentive provided.

Conversion kits are often excluded from rebate programs. However, they can be a more affordable way to experience the benefits of e-bikes, and might be more compatible with those who have custom style bikes (e.g. trikes, recumbents) already who are seeking to electrify them.

Many e-bike rebate programs restrict rebate eligibility to those models sold at local bike stores, which delivers benefits to the local economy, and helps ensure availability of parts and maintenance expertise. However, it does not offer the potential benefits of a lower purchase price of online models. Bike stores tend to only service the e-bike brands they sell, as many of the e-bike brands have proprietary diagnostic software and training for the electronic portions of the e-bikes. Some online e-bike stores have arrangements with local service providers, such as RadPower and Velofix. Some local retailers who sell e-bikes don't service the electrical parts, only the bike parts (e.g. Canadian Tire), but will replace the electrical parts when sent by the dealers.

Rebates for used e-bikes would reduce the price barrier significantly. However, this makes verification of eligible purchase more difficult given the lack of official receipt for a used e-bike, which would often be purchased via a personal sale or online. Providing rebates for new e-bikes will increase the number of e-bikes available in the region, which would potentially support a local used market and further reduce price barriers as a secondary effect.

Recommendations

- Must meet Motor Vehicle Act's definition of a Motor Assisted Cycle
- Any typology (cruiser, road, trail, cargo, fat)
- New only (for receipts for verification of eligibility)

Other questions can be addressed through engagement.

A5.4 Incentive amounts

The UBC report commissioned by the City of Victoria recommends a flat \$400 incentive for e-bikes (Aono & Bigazzi, 2019). This recommendation is based on an analysis of rebate amounts from \$200 to \$1600 and balances factors including the number of rebates available for a fixed program budget, new bike shop revenue, and the amount and percentage of rebates going to additional purchasers (e.g. funds reaching beyond program free ridership).

A5.5 Equity considerations

The District of Saanich has committed to equity in climate action, including distributional equity, in which programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need. A targeted universalism approach can be used, which seeks to design specific interventions with different parts of the community to achieve the same overall goal of reducing GHG emissions and preparing for a changing climate.

Equity has many facets and each of those facets interacts with the other (i.e. intersectionality).

An equity lens has not yet been developed for the Saanich Climate Plan, therefore the equity recommendations below should be considered preliminary and can continue to be refined and improved through engagement with affected communities and capacity building within the organization.

A5.5.1 Ethnicity

- Program delivery agents can be encouraged to take appropriate training and/or agree to respectful service expectations for all (e.g. the ICA Safe Harbour training or similar).
- In BC, bicycle helmets are mandatory except for Sikhs who wear turbans. Materials and delivery agents should be aware of this exemption.
- Trusted community organizations can be contacted to promote the e-bike program in appropriate ways
- Program promotional materials can include a diversity of ethnicities.
- More engagement with affected groups would be beneficial to refine recommendations.

A5.5.2 Immigration/citizenship status

- Financing can exclude newcomers to Canada if they do not have credit history in Canada, making financing not an accessible mechanism for e-bike incentives – promotional material and program design can avoid assuming financing is available to all.
- While Census statistics show that new immigrants have higher rates of active transportation than other groups, BC-specific bike safety skills courses may be helpful in order to benefit from an e-bike program.
- Trusted delivery agents can be partners in promoting the e-bike program, using appropriate language translation.
- Promotional materials can include appropriate representation
- More engagement with affected groups would be beneficial to refine recommendations

A5.5.3 Gender and sexual orientation

- Program delivery agents can be encouraged to take appropriate training and/or agree to respectful service expectations for all (e.g. the ICA Safe Harbour training or similar).

- Forms should avoid binary gender only choices.
- Representation on promo materials can include different genders and LGBTQI* people.
- More engagement with affected groups would be beneficial to refine recommendations

A5.5.4 Age

- Bike styles that allow for easy step-through and/or tricycles for older people to reduce fall risk can be included.
- Bike styles that allow for transporting young children can be included. Safety equipment for children comes at an additional cost. Could consider an additional subsidy if this is a target audience.
- Application forms can be available online or on paper to avoid a technology gap in accessibility.
- Representation on promo materials can include different ages

A5.5.5 Ability

E-bikes may expand access to active transportation to more people across different fitness and ability levels. Modifications to improve the suitability of e-bikes for people with disabilities may come with an additional cost.

- More engagement with affected groups would be beneficial to develop recommendations

A5.5.6 Income

The following policy options can impact the accessibility of the rebate program for residents with different incomes across our community:

- Risks vs. rewards
- Percentage value of bike or fixed dollar rebates
- Income qualified rebate levels
- Reserved funds for different income levels
- Point of sale vs. rebate
- Turnaround time for rebates
- Rebate amounts

Risks vs. Rewards

E-bikes may deliver cost savings compared to vehicle ownership. They may deliver time savings for those who use public transit and/or other active transportation. They may also increase well-being through encouraging healthy activity levels while making active transportation more physically accessible.

The risks for low to mid income participants for purchasing an e-bike for transportation may include:

- *Opportunity cost* – if the e-bike isn't suitable, the money used to purchase the bike could have been used for other more suitable options. Due to depreciation, it is not possible to fully recoup the initial purchase cost.
- *Debt burden* – if a loan is accessed to purchase the bike, there is an increased debt servicing cost and reduction of available borrowing power for other priorities.
- *Theft* – bike theft is common in Greater Victoria. Insurance may or may not cover the cost of a new bike in a cost effective way.

- *Bike quality/longevity/operating costs* – there are a diversity of e-bike costs and quality available for purchase. Lower quality bicycles may have a shorter lifespan and/or require more maintenance, reducing their utility and increasing costs for the e-bike and other backup transportation options.

E-bikes require a safe, covered storage place at home, ongoing funds for maintenance, helmets, rain gear, etc. Providing clear information about the potential risks and how to mitigate them can be an important equity measure. More engagement with residents living below the Low Income Cut-off (LICO) is recommended to better understand the appropriateness of e-bikes as a transportation option and program design options to overcome barriers for this group.

Percentage value of bike or fixed dollar rebate

Research by Bigazzi and Berjisian (Bigazzi A. B., 2020) suggests that flat (or capped) rebates, rather than rebates based on a percentage value of a bike, yield better income equity. The results of Bigazzi and Berjisian’s modelled demand for different rebate amounts are shown in Table 23 below.

Table 23: Share of rebate uptake by purchaser income and rebate amount (from Bigazzi and Berjisian’s model)

Rebate amount	Low income	Medium income	High income	Low price	Medium price	High price
\$200	25%	33%	42%	35%	33%	32%
\$800	27%	34%	40%	39%	32%	29%
\$1,600	28%	34%	38%	42%	31%	27%
10%	25%	34%	41%	34%	33%	33%
20%	26%	34%	41%	34%	33%	33%
30%	26%	34%	40%	34%	33%	33%
Reference share of baseline demand	24%	33%	43%	33%	33%	33%

More cost-conscious buyers will likely stick to lower cost bikes. Choosing a lower cost e-bike and accessing a fixed dollar incentive means the rebate covers a higher percentage of the e-bike than if they had purchased a more expensive e-bike. However, a higher priced e-bike is often needed due to the intended use rather than a preference for style or luxury, for instance the need for a cargo e-bike to carry children and/or shopping would result in a higher cost. It should be noted that Bigazzi and Berjisian did not model a different rebate amount for different income levels.

Decreasing free ridership, increasing equitable distribution, and maximizing trip substitution are key goals of the incentive program.

Approved local vendors vs. any vendor

A greater diversity of lower cost e-bikes are available online than at local bike stores. However, owners of e-bikes purchased online may experience difficulty accessing local support for maintenance and repairs, which may shorten the useful life of the bike, resulting in higher lifecycle costs. Purchasing e-bikes locally supports local climate-friendly businesses and employment and ensures the bike will be able to be used throughout its intended lifespan.

Timelines for Incentives (point of sale, rebate processing time)

Point of sale incentives improve accessibility by lowering the cost immediately rather than requiring full payment of the e-bike up front and waiting for a rebate cheque. This helps to address equity by assisting those without access to the full funding required for the e-bike purchase may still participate in the program.

Point of sale incentives are more difficult to administer, particularly with a larger number of participating vendors, and adds an administrative burden to both the rebate administrator and the participating vendors.

If a point of sale rebate is not possible, quick turnaround time for rebates may also mitigate the upfront cost barrier to some degree by ensuring a short timeframe to process applications and distribute rebates. Quick turnaround times can be achieved through:

- Processing applications as they arrive rather than batching
- Ensuring backup staff are trained in processing applications and enabled to create cheque requisitions
- Ensuring multiple signing authorities are available for cheque requisitions of this type
- Sending applications to finance weekly for processing.

Rebate amounts

Models (Bigazzi A. B., 2020) suggests that in a rebate program with higher dollar amounts per rebate “a larger share of rebates go to low income and new (marginal) purchasers.

Within a fixed program budget, larger incentives reach fewer people.

Smaller rebates are modelled to provide help to a potentially larger number of people, but risk increasing free ridership (Bigazzi A. B., 2020) and fail to address the upfront cost barrier to lower income households who are more cost-sensitive and have less disposable income.

The UBC report commissioned by the City of Victoria recommended a flat \$400 rebate for e-bikes (Aono & Bigazzi, 2019). That would represent a 6-8% subsidy for e-bikes in the \$3,000-\$5,000 price range, or a 20% subsidy for the lower cost bikes in the \$2,000 range.

If a \$400 flat rebate were provided to all participants regardless of income, and a \$3,000 e-bike was purchased, that cost would represent 1.8% of the income of a ninth decile household, 4.2% of for a fifth decile household, and 13.5% for a first decile household.

Transportation is typically the second largest household cost, following housing costs, in the region. Reduced transportation costs can ease pressure on household budgets facing high home ownership or rental costs.

The CRD estimates the average annual transportation cost per household in Saanich is \$12,294, a large part of which are the fixed costs of vehicle ownership. For a family making the median income in Saanich the average transportation cost would represent 18% of their annual after tax income.

E-bike ownership, by contrast, is estimated to have an annualized cost of \$1342. That being said, e-bikes are not a one-to-one replacement for vehicles, and therefore additional costs for backup transportation

In comparison, EV incentives (\$5,000 from the federal program, \$3,000 from the Provincial program, or \$8,000 in total) plus support for EV charging installation are available for eligible vehicles between

\$37,895+ and \$56,499+. An \$8,000 rebate amounts to a subsidy of between 14-21% for eligible EVs. There is a further \$6000 available through the SCRAP-It program from qualifying vehicles.

An equivalent subsidy percentage for e-bikes would result in a rebate of between \$300 and \$1,000, depending on the price of the bicycle. It should be noted that this does not consider the additional costs for items that may be needed by the participant such as locks, helmet, child seat, rain gear, paniers etc.

Tiered rebate levels by income

For the lowest decile earning households in Saanich, a \$3000 e-bike would use approximately 16% of their annual income. For fifth decile earners, the same e-bike would use approximately 5% of their annual income, and for ninth decile earners, approximately 2% of their annual income.

An income-qualified incentive could be designed, for example, to approximate e-bikes costing the same percentage of income across income groups. Table 24 shows the incentive amounts required for a \$3000 e-bike to represent either 2% or 5% of a resident’s annual income.

Table 24: Rebate levels required for e-bike cost to equal percentage of annual income across income deciles

Economic families and persons not in an economic family	Rebate to make a \$3000 e-bike no more than 2% of income	Rebate to make a \$3000 e-bike no more than 5% of income
Lowest decile	\$ 2,614	\$2,035
Second decile	\$ 2,414	\$1,535
Third decile	\$ 2,214	\$1,035
Fourth decile	\$ 2,018	\$545
Fifth decile	\$ 1,760	-\$100
Sixth decile	\$ 1,472	-\$820
Seventh decile	\$ 1,110	-\$1,725
Eighth decile	\$ 714	-\$2,715
Ninth decile	\$ 50	-\$4,375
Highest decile	Less than \$50	Less than -\$4,375

Income qualifying criteria

There are many measurements of economic situations of households and individuals in Canada, including the Low Income Cut Offs (LICO), Low Income Measures (LIM), and the Market Basket Measure (MBM). Living Wage calculations, income deciles, median wages, and other measures could also be considered.

Generally, income qualifying programs consider household income and number of people (adults and children) in the home.

Table 25 compares various cutoff options for income qualification. The Saanich L.I.F.E program uses the Low-Income Cut Off (LICO) plus 5% to determine program eligibility. The Energy Conservation Assistance Program (ECAP) by BC Hydro and FortisBC also uses a similar approach, with a larger LICO-plus cutoff. Also available is the median income in Saanich for households of different sizes (children and adults) from the 2016 Census.

Table 25: Low Income Threshold for Saanich L.I.F.E program 2021 and ECAP program

# of people in family (includes children)	Combined income of all adults over the age of 18 in the home		
	Saanich L.I.F.E program 2021	BC Hydro and FortisBC ECAP	Saanich median income (after tax) by number of people in home
1	\$25,923	\$34,400	\$37,793
2	\$36,660	\$42,800	\$79,278
3	\$44,900	\$52,600	\$98,670
4	\$51,846	\$63,800	\$120,450
5	\$57,966	\$72,400	\$130,056 <i>(5 or more people in household)</i>
6	\$63,499	\$81,700	<i>See above</i>
7 or more	\$68,587	\$90,900	<i>See above</i>

Reserved funds for different income tiers

Reserving separate funds for different income groups in the community is an option. The funds could be equal dollar amounts or represent equal numbers of individual rebates with a different dollar amount if the rebates differed by income level.

Table 26 shows options for reserving for different income groups, with sample budgets and rebate amounts.

Table 26: Options for reserving funds for different income groups

Tiered rebates by income?	Equal # of participants and/or funding?		Rebate amount (each)	# of individual rebates	Funds	% of funds
No	Both	Income Level 1	\$400	150	\$60,000	50%
		Income Level 2	\$400	150	\$60,000	50%
		<i>Total</i>		300	\$120,000	
Yes	Equal # of participants	Income Level 1	\$200	150	\$30,000	29%
		Income Level 2	\$500	150	\$75,000	71%
		<i>Total</i>		300	\$105,000	
Yes	Equal funding	Income Level 1	\$200	262.5	\$52,500	50%
		Income Level 2	\$500	105	\$52,500	50%
		<i>Total</i>		367.5	\$105,000	

Higher income community members are more likely to be higher GHG emitters (Lee, 2020), while are more likely to have financial ability to choose more climate-friendly options. Lower income community members would benefit from financial incentives that improve affordability while also keeping GHG emissions low. A program that reserved at least half of funds for median and below households would be equitable in terms of dollars spent, but not redistributive, and also not equal in terms of the number of people reached in each income tier.

Complexity

Having an income-qualifying step can increase complexity by requiring additional steps in the process. However there are methods to address this increased complexity as outlined in Table 27 below:

Table 27: Measures to address program complexity

Additional Process/ Complexity	Mitigation Measure
Wider range of rebates available based on different eligibility criteria	<ul style="list-style-type: none"> • Clear communication materials and brochure • Phone hotline and email to explain the rebate (sustainability phone #)
Requirements to verify income	<ul style="list-style-type: none"> • Only require proof of income for higher rebate(s). If no proof of income provided then base rebate is applied • Use of the existing LIC qualified individuals as part of the Saanich L.I.F.E program as proof of low income and access to the higher rebate level
Protection of privacy	<ul style="list-style-type: none"> • Privacy Impact Assessment (PIA) completed

Income equity recommendations

- Fixed dollar rebate – not a percentage of the cost of the e-bike
- Three incentive tiers based upon income, equivalent to approximately 15-20% of the average e-bike cost and program budget dependent:
 - Base rebate - \$300-400
 - Median to LICO - \$400-\$800
 - LICO - \$800-\$1600
- No more than 50% of funds to go to over median households. No less than 10% of funds for LICO and below households (as of the 2016 census, 12.3% of Saanich households were below the LICO)
- Rebate process that minimizes payment time within 3 week window from application to receiving payment.

Other questions can be addressed through engagement.

A5.6 Administration

Administration tasks for the community e-bike incentive program pilot would involve:

- Development of rebate program forms & communications materials
 - Applicant FAQs
 - Eligibility criteria (Saanich resident, e-bike type, income)
 - Rebate application form
 - Participant surveys (developed in collaboration with research institution)
 - Webpage
 - Brochure
- Communication
 - Participant-facing communications about the rebate program
 - Bike vendor communications about the rebate program
 - Participating bike vendors in the point-of-sale rebate option – process facilitation
- Processing Applications
 - Development of process sheet for staff
 - Reviewing rebate applications for eligibility
 - Cheque requisitions raised for applicants

- Survey distribution to participants (in collaboration with research institution)
- Distributing the financial incentives to qualifying participants in a timely manner
- Records keeping and regular reporting, including remaining funds
- Problem-solving

In-house administration

An in-house rebate program would allow the municipality day to day control and feedback on the program's effectiveness, not require additional funding to a third party to administer, but would require resources from the Sustainability Division, Planning Department, and Finance Department.

The District of Saanich sustainability division currently operates an in-house rebate program with support from BC Hydro that provides applicants a \$500 rebate for the completion of a mid-construction blower door test for new homes as part of the BC Energy Step Code. The number of applicants for this rebate program has been low, so the demands on the finance department are small. The Finance department does not anticipate a time challenge with an in-house rebate model.

Should an in-house approach be used for the e-bike program, it is estimated that approximately 7 hours a week (0.2 FTE) would be required from existing sustainability staff time to administer the program based upon 300 rebates within the first year. Planning, Administration, and Finance have been engaged on the program and have indicated that the program could be delivered within existing resources from these divisions and departments.

Third party administration

A third party administrator may come with added benefits such as expertise in e-bikes, knowledge of the industry, etc. but would require a larger program budget.

Recommendation

In-house administration is the preferred option for the pilot. Other approaches can be considered if the program is extended/expanded.

Appendix 6: Engagement

Extensive engagement with community and industry has been undertaken in the development of the Community E-bike Incentive Pilot Program.

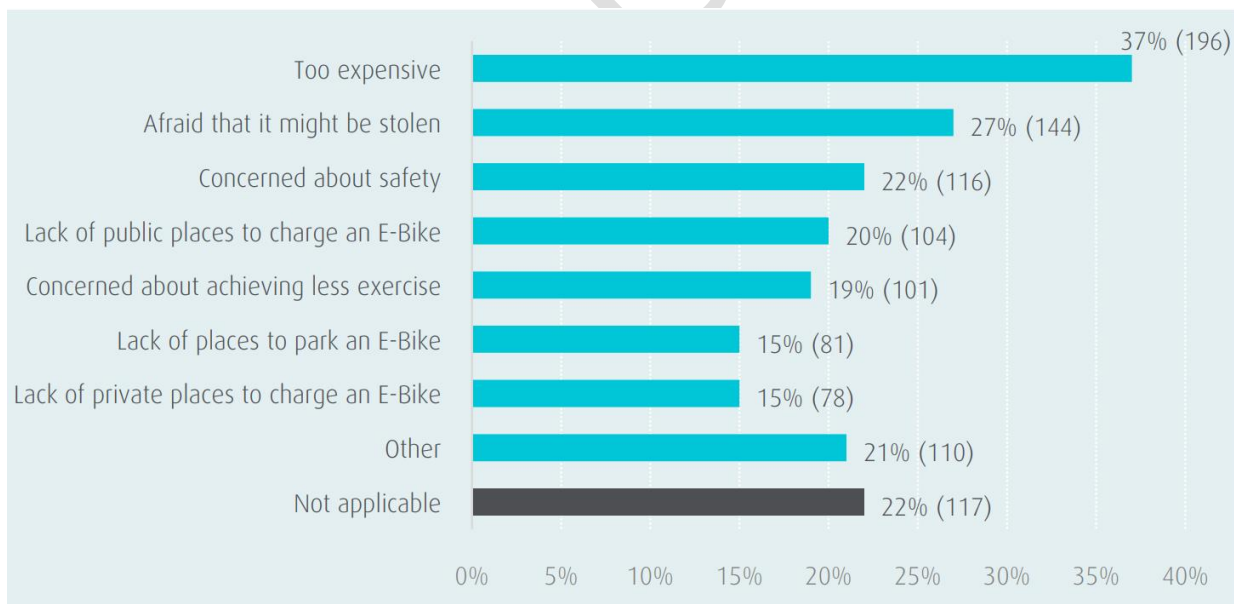
The program design has been informed by the following previous engagement processes:

- Saanich Active Transportation Plan
- Capital Regional District (CRD) electric vehicle (EV) and e-bike public survey
- Saanich Climate Plan
- Saanich E-mobility Strategy

The Saanich Active Transportation Plan (2018) was developed with three rounds of engagement involving thousands of Saanich residents. It found support for building a connected active transportation network, supporting a cultural shift to active transportation, and improving the convenience of active transportation for everyday needs. More information about the engagement findings can be found on the [Saanich website](#).

The 2018 CRD's EV and E-bike public survey with nearly 600 respondents identified perceived barriers to the adoption of e-bikes, as shown in Figure 20. More information about the survey is available on the [CRD website](#).

Figure 19: Summary of Barriers to E-Bike Ownership, CRD Public Survey



The Saanich Climate Plan (2020) was developed with three rounds of engagement with over 2,000 residents, and found support for urgent effective climate action at the municipal level, support for active transportation as a climate action strategy, and majority support for an e-bike incentive program. More information on engagement for the Climate Plan can be found on the [Saanich website](#).

The Saanich E-mobility Strategy (2020) was developed with two rounds of engagement with nearly 200 survey respondents in the second round, and found majority support or strong support for a municipal e-bike incentive or trial program.

Program-Specific Engagement

Based on the community-level support for the concept of an e-bike incentive program, two streams of engagement for the E-bike Incentive Pilot program were undertaken, one through a community partner regarding equity and one with industry (e-bike vendors).

Equity

The District of Saanich worked with the Community Social Planning Council (CSPC) to understand equity design options in the e-bike incentive program. The CSPC has expertise in delivery of sustainable transportation programs to income-qualified residents, and community-based research and engagement with those with lived experience of poverty. The CSPC hosted a workshop on equity in climate-friendly transportation program design with community-based organizations, focused primarily on issues facing low income residents but with an intersectional lens, including issues facing people of different ages, newcomers to Canada, and others. The CSPC also sought feedback from those with lived experience of poverty. A survey about transportation experiences and e-bike appropriateness is in development to be deployed with a group of income-qualified Saanich residents. Their feedback will be used to inform the design of the pilot program.

Industry

The District conducted two rounds of engagement with e-bike vendors in the region.

The first round consisted of contacting e-bike vendors in Saanich, and bike stores participating in the SCRAP-IT e-bike program in the rest of the CRD for informational interviews about their perceptions of the current market and trends for e-bikes, their support for a municipal program, and their preference for an incentive, trial program, or other approach. A total of 9 interviews were conducted with staff.

There was majority support for a rebate program, majority not in support of a lending/trial program, majority prediction that there would not be supply issues in 2021 and beyond. Many emphasized support for PST exemptions on e-bikes.

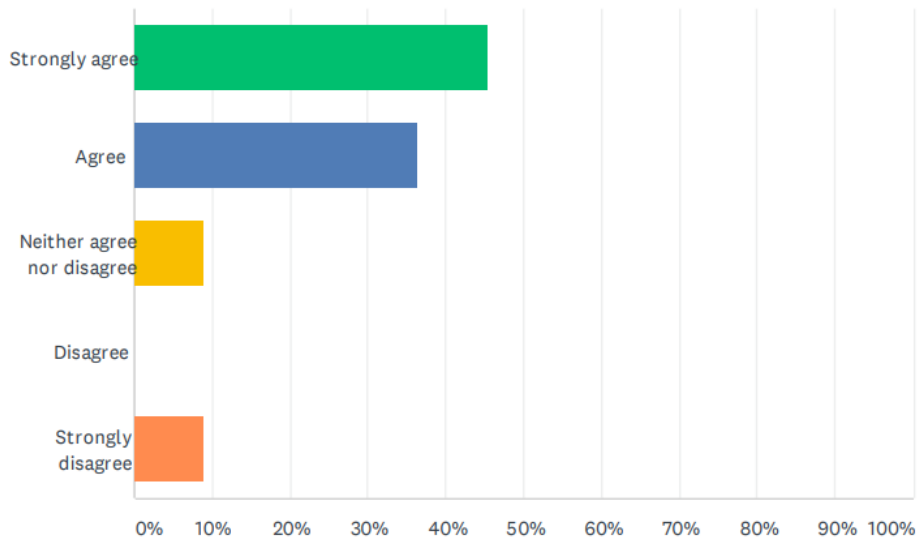
The second round of engagement consisted of an online survey asking detailed program design questions. The survey was sent to 21 e-bike vendors in the Capital Region found through an online search with e-mail addresses published on their websites. There were 12 survey responses and 1 email response received, for an over 50% response rate.

Overall, there was support for the eligibility criteria, rebate amounts, and rebate to resident process, and hesitancy about the point of sale through vendor incentive for the complexity and paperwork for their business that would be required.

Selected survey response summaries are included below.

Q3 Do you agree with the proposed eligibility criteria for applicants?

Answered: 11 Skipped: 1



ANSWER CHOICES	RESPONSES	
Strongly agree	45.45%	5
Agree	36.36%	4
Neither agree nor disagree	9.09%	1
Disagree	0.00%	0
Strongly disagree	9.09%	1
TOTAL		11

Not

Q4 (Optional) Please explain or outline any suggested changes.

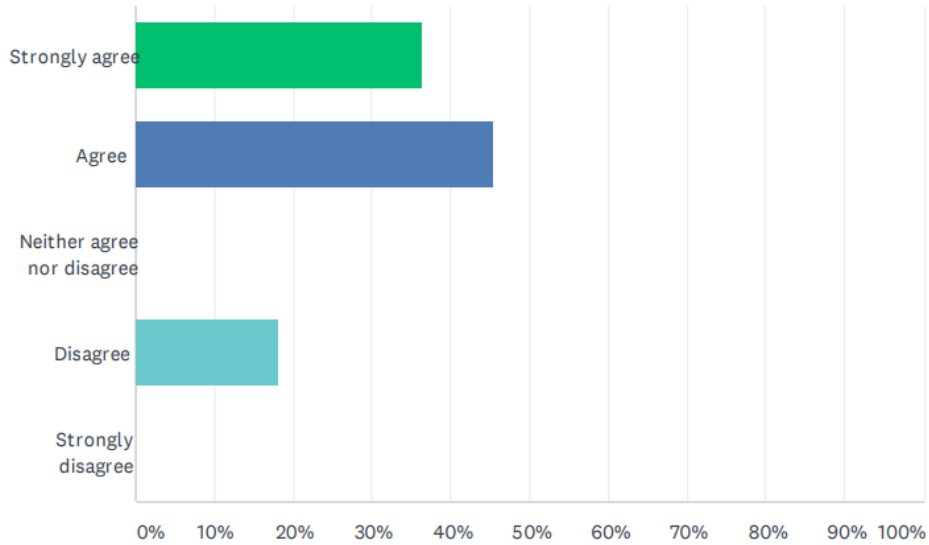
Answered: 6 Skipped: 6

#	RESPONSES	DATE
1	I think one bike per small business should be allowed for running errands or making deliveries. Those tend to be short haul multiple trips that would be well served by ebike use.	1/6/2021 1:58 PM
2	There are already incentives for businesses in BC so this is an understandable move to getting everyone out of their cars.	1/6/2021 10:45 AM
3	it makes sense and is reasonable	12/24/2020 10:39 AM
4	why 16?	12/23/2020 9:19 AM
5	Maybe 2 per household? We see a lot of couples getting ebikes together for mobility and exercise	12/23/2020 9:04 AM
6	Not in favour of the one per household limit. Ebiking is often a couples or group activity.	12/22/2020 4:46 PM

Not for Dist

Q5 Do you agree with the proposed eligibility criteria for e-bikes?

Answered: 11 Skipped: 1



ANSWER CHOICES	RESPONSES	
Strongly agree	36.36%	4
Agree	45.45%	5
Neither agree nor disagree	0.00%	0
Disagree	18.18%	2
Strongly disagree	0.00%	0
TOTAL		11

Not

Q6 (Optional) Please explain your answer or provide suggested changes.

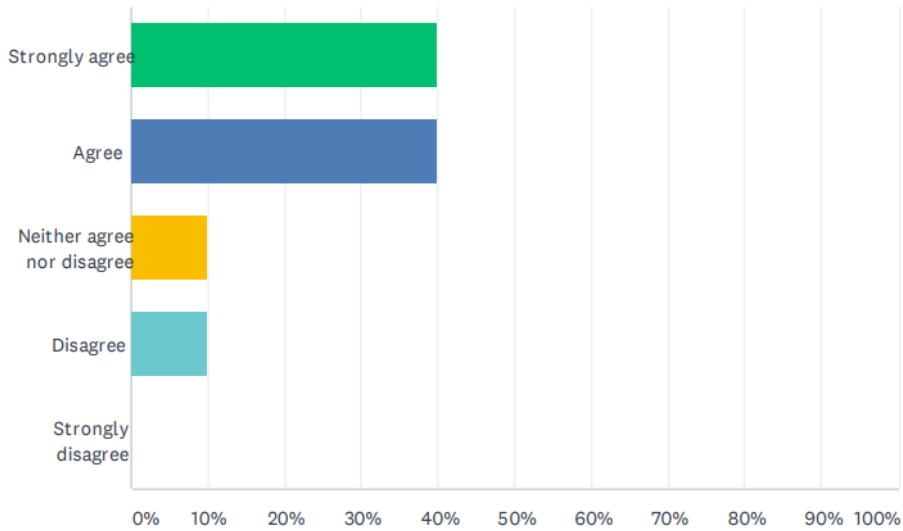
Answered: 4 Skipped: 8

#	RESPONSES	DATE
1	We recommend a minimum of \$1500 for an ebike, because ebikes cheaper than that are lower quality, prone to malfunction, hard to find servicing for, and may end up in the landfill sooner	12/24/2020 10:39 AM
2	"Regular non throttle assist E-Bikes come with up to 700 watts, other than that it's good.	12/24/2020 9:54 AM
3	No bike shop refers to wheel size as 350 mm. That will be confusing. They are either 24", 26", etc for mountain and kids or 700 c. for road style and hybrids	12/23/2020 9:19 AM
4	I would include conversion kits, for many people who already have a bike in a garage, that's the most affordable option to try an ebike.	12/22/2020 4:22 PM

Not for District

Q7 Do you agree with the proposed incentive amounts?

Answered: 10 Skipped: 2



ANSWER CHOICES	RESPONSES	
Strongly agree	40.00%	4
Agree	40.00%	4
Neither agree nor disagree	10.00%	1
Disagree	10.00%	1
Strongly disagree	0.00%	0
TOTAL		10



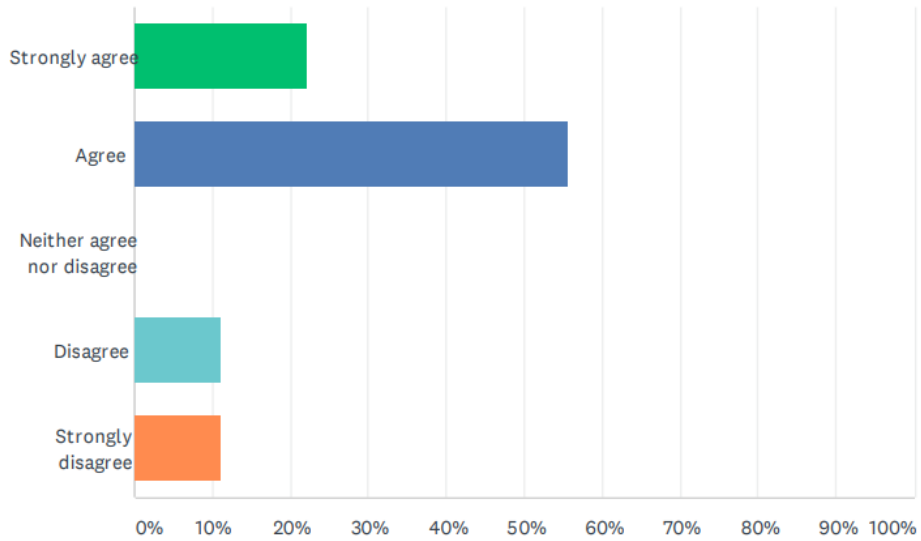
Q8 (Optional) Please explain your answer or provide suggested changes.

Answered: 3 Skipped: 9

#	RESPONSES	DATE
1	We strongly support the income-qualified incentive	12/24/2020 10:41 AM
2	It should be based on Value not income. \$2000= 400 \$3000=600 \$4000=800	12/24/2020 9:56 AM
3	The income qualification is reasonable. Ebikes can be great car alternatives for lower income people to commute with!	12/22/2020 4:47 PM

Q9 Do you agree with the proposed rebate to resident process?

Answered: 9 Skipped: 3



ANSWER CHOICES	RESPONSES	
Strongly agree	22.22%	2
Agree	55.56%	5
Neither agree nor disagree	0.00%	0
Disagree	11.11%	1
Strongly disagree	11.11%	1
TOTAL		9

Not

Q10 (Optional) Please explain your answer or provide suggested changes.

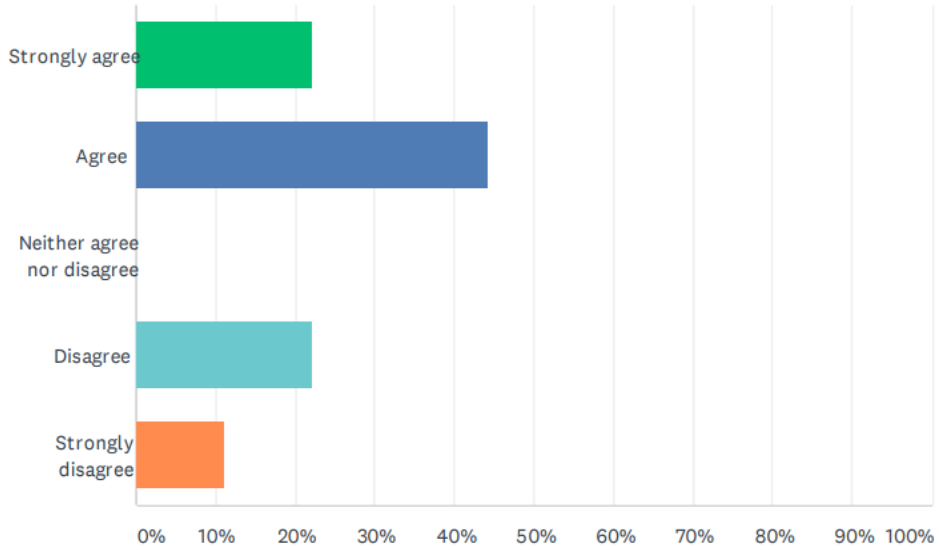
Answered: 6 Skipped: 6

#	RESPONSES	DATE
1	We disagree with only #1 of the proposed rebate to resident process. We believe that since this is a local incentive sales should be kept local supporting local businesses, not online (companies located outside the Greater Victoria/CRD)	1/10/2021 2:52 PM
2	I like this option, but I think (as a biased small business owner!) that it should apply to local vendors (as in in BC or the Island) to help support these businesses. I like that the onus is on the customer to submit the paperwork and receive a cheque directly, rather than adding to the business' workload and having to wait for payment. If the customer can't afford to pay the bill in full and wait to be reimbursed, they could pay their share to the shop as a deposit and then they can submit that receipt. Maybe there could be a fast-track process for those customers.	1/6/2021 2:09 PM
3	sounds fair and reasonable	12/24/2020 10:50 AM
4	Vendor online purchase should be from local only!	12/24/2020 10:02 AM
5	Do not agree to online sales as some of those bikes are not then able to be serviced due to addition of non-bike parts. Plus this is NOT promoting local.	12/23/2020 9:26 AM
6	Disagree with the point of sale administration. Doesn't seem like it would work with the income verification component, and places an unwanted administrative burden on the shop.	12/22/2020 4:55 PM

Not for L

Q11 Do you agree with the proposed point of sale incentive through vendor process?

Answered: 9 Skipped: 3



ANSWER CHOICES	RESPONSES	
Strongly agree	22.22%	2
Agree	44.44%	4
Neither agree nor disagree	0.00%	0
Disagree	22.22%	2
Strongly disagree	11.11%	1
TOTAL		9

Not

Q12 (Optional) Please explain your answer or provide suggested changes.

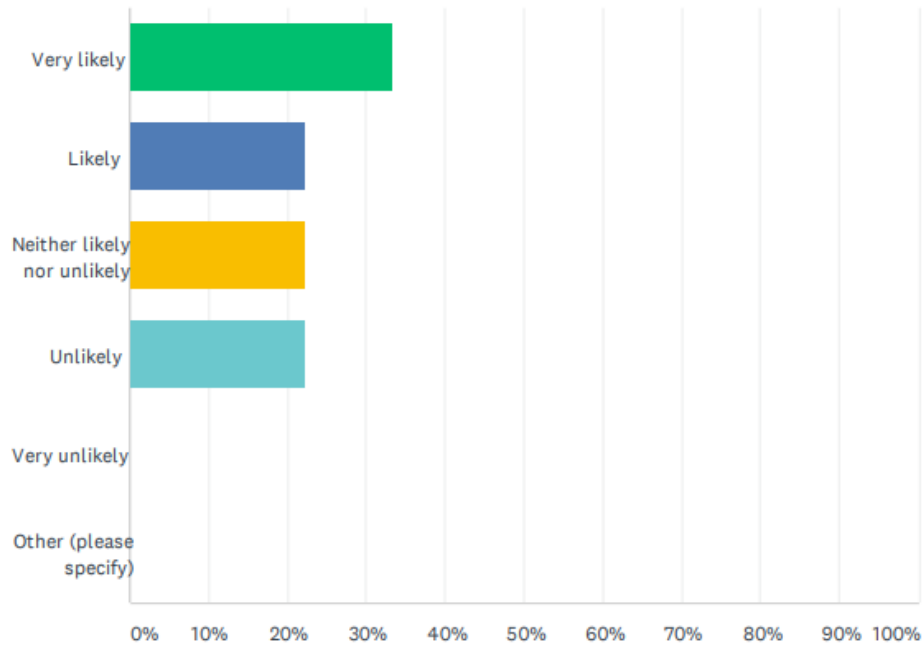
Answered: 3 Skipped: 9

#	RESPONSES	DATE
1	it is much more onerous and not really justifiable.	12/24/2020 10:50 AM
2	Just more paperwork and time spent for potentially limited payback to store. Would rather, since the incentive is offered by Saanich that Saanich provide the incentive.	12/23/2020 9:26 AM
3	Quite a bit of additional administrative burden placed on the Vendor. However, would be more convenient for most customers.	12/22/2020 4:55 PM

Not for Distribution

Q13 If point of sale incentives were included in a District of Saanich e-bike incentive program, would your business be interested in offering point of sale incentives?

Answered: 9 Skipped: 3



ANSWER CHOICES	RESPONSES	
Very likely	33.33%	3
Likely	22.22%	2
Neither likely nor unlikely	22.22%	2
Unlikely	22.22%	2
Very unlikely	0.00%	0
Other (please specify)	0.00%	0
TOTAL		9

Q14 (Optional) Please explain your answer or provide suggested changes.

Answered: 4 Skipped: 8

#	RESPONSES	DATE
1	It sounds like the rebate is off the total amount of the sale after taxes. This should be made clear to the residents when the program is published so there is no misunderstanding about how much tax they are paying.	1/10/2021 2:52 PM
2	would rather not, but would not want to lose potential sales because of it	12/24/2020 10:50 AM
3	As stated this creates more work for us that is not necessary.	12/23/2020 9:26 AM
4	Would consider doing so depending on regional uptake by other shops.	12/22/2020 4:55 PM

Q15 Do you have other comments or questions regarding the design of a District of Saanich e-bike incentive program?

Answered: 4 Skipped: 8

#	RESPONSES	DATE
1	Keep me in the loop! This is an exciting step in the right direction!	1/6/2021 10:48 AM
2	FANTASTIC!!! I hope that this program is implemented in other municipalities - not just because bike retailers make more money, but because more people will ride bikes, and that benefits everyone in society (maybe not car dealers - haha)	12/24/2020 10:50 AM
3	Very excited for another reason for people to switch to bikes from cars!	12/22/2020 4:55 PM
4	Great incentive!	12/22/2020 4:25 PM

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References

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