

Incentivizing E-bikes in Canada: The World's Safest and Healthiest Zero Emission Electric Vehicle



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1. Purpose	3
2. Potential amendments	3
3. Cost Implications	3
Appendix A. Key Definitions	4
Motor Vehicle Safety Act S.C. 1993, c. 16	4
Motor Vehicle Safety Regulations C.R.C., c. 1038	4
Appendix B. Benefits	4
Appendix C. Future Options	5
C.1 Including Pedal Bikes	5
C.2. Other types of incentives	5
Appendix D. Budget 2019 Analysis: Rationale for extending the EV rebate to E-bikes	5
Investing in the Future of Transportation	5
A new approach to helping middle class Canadians find and keep good jobs	6
Helping With the High Cost of Post-Secondary Education	7
Supporting Business Investment in Zero-Emission Vehicles	7
Making Zero-Emission Vehicles More Affordable	7
Advancing Gender Equality	8
Empowering Seniors in Their Communities	8
Addressing Major Health Care Challenges	9
Making Canada Accessible and Supporting People With Disabilities	9
A Fair Tax System for All Canadians	9
Appendix E. About Vélo Canada Bikes:	9
Appendix F. European Cycling Federation Overview	9

1. Purpose

Provide financial incentive for the purchase of e-bikes, allowing Canada to join a worldwide movement towards sustainable electric-assisted mobility and provide clarity around the generally-accepted definition of bicycles as the quintessential “zero-emissions vehicles”, thus providing a more fair and useful program for all Canadians.

2. Potential amendments

- 2.1. “For further clarity, the definition of zero-emission passenger vehicle will include power-assisted bicycles”
- 2.2 Remove the term “automobile” where it occurs

3. Cost Implications

- 3.1. Recommended Target: Rebate of up to \$750 for the purchase of an e-bike (see breakdown)¹
- 3.2 Estimated current value of Canadian e-bike market
\$17M-\$22M CAD²
- 3.3 Estimated average unit cost
3031\$CAD³
- 3.4 Estimated cost of program delivery
Defer to department.
- 3.5 Estimated overall program cost
TBD by department

¹ (**Max \$450 - e-bike; max \$750 - cargo e-bike**) Based on a review of existing national e-bike incentive programs in other countries and the Austrian success story. Source: [ELECTROMOBILITY FOR ALL Financial incentives for e-cycling](#) (Holger Haubold, ECF Fiscal and Economic Policy Officer, European Cyclist's Federation) Cargo bike defined as a bicycle meant for carrying goods or more than one person (ie. a Bakfiets for a family with children or a bicycle designed for local delivery or contractor).

² The 2018 US sales numbers for e-bike was \$133,719,594 USD, but did not include all possible categories and numbers. Estimation in CAD, at 10% of the US market, providing for a margin of error, estimates the Canadian e-bike market at between \$17M-\$22M CAD.

³ Based on estimates provided by Canadian bicycle marketing professionals that use more robust figures collected in the US, the estimated cost of an e-bike sold in Canada (including entry level, high end models and cargo e-bikes) is 3031\$CAD.

Appendix A. Key Definitions

Motor Vehicle Safety Act S.C. 1993, c. 16

“**vehicle** means any vehicle that is capable of being driven or drawn on roads by any means other than muscular power exclusively, but does not include any vehicle designed to run exclusively on rails. (véhicule)”

Motor Vehicle Safety Regulations C.R.C., c. 1038

“**power-assisted bicycle** means a vehicle that:

- (a) has steering handlebars and is equipped with pedals,
- (b) is designed to travel on not more than three wheels in contact with the ground,
- (c) is capable of being propelled by muscular power,
- (d) has one or more electric motors that have, singly or in combination, the following characteristics:
 - (i) it has a total continuous power output rating, measured at the shaft of each motor, of 500 W or less,
 - (ii) if it is engaged by the use of muscular power, power assistance immediately ceases when the muscular power ceases,
 - (iii) if it is engaged by the use of an accelerator controller, power assistance immediately ceases when the brakes are applied, and
 - (iv) it is incapable of providing further assistance when the bicycle attains a speed of 32 km/h on level ground,
- (e) bears a label that is permanently affixed by the manufacturer and appears in a conspicuous location stating, in both official languages, that the vehicle is a power-assisted bicycle as defined in this subsection, and
- (f) has one of the following safety features,
 - (i) an enabling mechanism to turn the electric motor on and off that is separate from the accelerator controller and fitted in such a manner that it is operable by the driver, or
 - (ii) a mechanism that prevents the motor from being engaged before the bicycle attains a speed of 3 km/h; (bicyclette assistée)”

Appendix B. Benefits

From [ELECTROMOBILITY FOR ALL Financial incentives for e-cycling European Cycling Federation:](#)

- E-bikes allow for longer distances to be cycled with the same level of effort compared to conventional bikes. A study of the German Federal Environmental Agency shows that in an urban context, conventional bikes are faster than cars for distances of up to 5 km. With e-bikes, this radius is enlarged to 10 km, and even for longer distances of up to 20 km the time difference with the car (electric or fuel-driven) is marginal.¹
- E-bikes make it easier to overcome natural obstacles to cycling, like hills or headwinds.

- E-bikes and electric cargo bikes make it possible to transport heavier goods than conventional bikes and cargo bikes. This is an advantage for private individuals, for example when they do their shopping by bike, but also for companies relying on fast urban logistics solutions.
- Electrically assisted bikes open up cycling for groups that have not cycled previously because of their physical condition (the elderly) or because of a lack of perceived convenience, for example commuters who do not want to transpire during their ride to work.

Appendix C. Future Options

C.1 Including Pedal Bikes

Including pedal bikes offers the most inclusive and successful program with the most benefits, however the Motor Vehicle Safety Act explicitly refers to “vehicles” as being “any vehicle that is capable of being driven or drawn on roads by any means other than muscular power exclusively”. For the purposes of amending the Budget Implementation Act and associated regulations, it is simpler at this time to simply incentivize the power-assisted bicycle market on its own.

A 3-tiered rebate:

\$225 - pedal bike
\$450 - e-bike
\$750 - cargo e-bike

C.2. Other types of incentives

Due to the high cost-benefit of cycling (much of which is returned to the Government of Canada in the form of cost effective methods for reducing GHG emissions, worker productivity, reduce more efficient usage of health transfers to provinces due to reduced chronic disease, and lower overall infrastructure costs, it is recommended that the Government of Canada explore any other financial incentive within its power include GST/tax exemptions, income tax deductions (for individuals and for businesses) and extend these to all bicycles.

Appendix D. Budget 2019 Analysis: Rationale for extending the EV rebate to E-bikes

Each subsection below represent a headings and subheadings taken verbatim from the Budget Plan 2019. Each explanatory paragraph explains how the issue will also be addressed by increasing access to cycling, and shows why extending the EV rebate to cycling is fiscally prudent, strong policy with multi-faceted benefits.

Investing in the Future of Transportation

Bicycles represent the future of independent transportation worldwide. Cycling is a mode that competes extremely well with lifestyle habits developed around automobiles, especially among fast growing demographics living increasingly urban and suburban areas. In Canada, the level of latent demand for cycling among adult commuters who are currently driving is consistently very high; the latent demand is even higher among children, youth and young adults. As society ages, cycling becomes critical for retirees who see

bicycles as offering quality of life, low-impact exercise, inexpensive mobility and an opportunity to age in place. As equity becomes a more and more mainstream, it will be clear that current imbalances (see section on Gender Equity below) cannot continue. In modern times, uptake for cycling - a mode shift toward less energy intensive and more sustainable modes - has been rapid wherever it is being adequately supported by government. Additionally, no matter where you look in Canada, rural municipalities, towns, First Nations, cities and provinces are developing cycling plans and building dedicated infrastructure networks at a rate never before seen.

Because trip distances are longer in some areas, e-bikes are particularly adept at filling a gap amongst newly-sprawled suburban areas - the land use quandary of our times. That is in large part why the demand for e-bikes, now already well-established throughout Asia and Europe, has spread to North America now too and is growing at a remarkable pace.

Multi-modal regional travel (mobility as a service) is clearly the wave of the future. Cycling combines seamlessly with mass transit to provide a viable alternative to single occupancy vehicles (SOVs) for longer-distance independent travel. It is the one investment that makes the most of what are relatively capital-intensive and expensive government investments in fixed public transit systems. Combined, cycling and transit ensure that an exponentially higher number of potential users can get to a new or existing transit network.

Congestion is also still a problem with any automobile-focused transportation future. Those who must drive or continue to drive benefit since, from a sheer lack of physical room for expansion, automobiles have clearly reached congestion tipping point that can only be solved by diversifying. It is worth noting that zero emissions automobiles alone, for example, will do nothing to solve congestion. Only bicycles allow for more people to travel in the same space with less required storage space at a fraction of the cost of any other solution.

Goods movement. Commercial-quality electric cargo bicycles accomplish much of the same function as local delivery trucks with no emissions. They also pose no urban safety downside and bring the costs of last-mile shipping down due to lower operating costs.

It is not hyperbole to suggest that bicycles are fundamental to the future of transportation of all people, for all of their needs, everywhere. The bicycle is able to provide complete mobility options for entire countries across a broad spectrum of built forms and climates. In short the future is already here around the world, it is rapidly coming to Canada, and it can be sped up.

A new approach to helping middle class Canadians find and keep good jobs

E-bikes in particular are revolutionizing the transportation options available specifically to those living in middle-class suburban environments around the world - allowing for work destinations that previously existed on the edge of a reasonable trip distance now firmly within reach. Most work commutes in Canada are already within cycling distance anyway, and increased infrastructure is opening new routes every day.

In addition, nearly all work commutes of all kinds can be accomplished by a mix of cycling and transit. A rebate on a bicycle doesn't just benefit the main breadwinner(s). Importantly, a middle-class household is, by definition, a multi-modal and multi-demographic one. That means saving money on transportation for one person creates opportunities for the rest. Middle-class Canadian households include people of a diversity of

ages and needs: secondary breadwinners who work nearby for example, homemakers or telecommuters whose work includes daily errands close to home or shepherding children to school, adolescents seeking for their first job at a nearby retail store, even the youngest children - they too need to get to school refreshed, ready to learn so that, one day, they can earn a good wage.

All of the above demographics ultimately benefit in households where cycling is normal and supported. Ultimately, a household only has so many places to park another car, and a bike or e-bike rebate opens up a suite of transportation options for different trip lengths and personal budgets for an entire family throughout the many different phases of their lives.

Helping With the High Cost of Post-Secondary Education

Post-secondary students incur penalties for car ownership in student loan applications: they have less borrowing power if they have one. A student without a car then has less financial burden and increased flexibility. Lastly, the high cost of car ownership and operation itself is often prohibitive for university students at all and forces young Canadians to make choices between transportation and their educational future.

Supporting Business Investment in Zero-Emission Vehicles

Developing the Canadian market for cycling has only an upside and creates incentive/room for businesses to invest in the innovative future of transportation, whether to serve customers better or to make their own employees happy. There are numerous reasons/angles for business investment to consider. Rebates on bicycle purchases would make it more attractive for thousands of large employers to consider investing in a bike fleet for the office or invest in loan e-bike programs to get employees to start biking to work. Both increase productivity and reduce private health insurance costs - both are important strategies already deployed throughout Europe.

Companies who invest in fleets for their employees also know it is the kind of perk that attracts geographically-mobile skilled workers. Skilled workers care deeply about quality of life when choosing where to live. Bicycles attract them.

Electric bicycles are already being designed in Canada. Canada is also an exporter of electric bike share bicycles to Europe. A bigger domestic market would further increase just that one industry's resilience alone by offering more reasons to develop local markets.

Goods movement providers see value too. Electric cargo bicycles and personal delivery bicycles have unmatched value as last mile and local travel in congested cities. In short, making bicycles of all kinds even more affordable through incentives will hasten the adoption of numerous bike-friendly business practices in Canada and help take advantage of an entire new economy already being built around them.

Making Zero-Emission Vehicles More Affordable

A bicycle is a zero-emission vehicle that makes us happy, productive, healthy *and wealthy*. Support for cycling makes transportation affordable, period. The entry-level price of car ownership of *any* kind is already prohibitive for many Canadians. An electric car, starting at \$35000 or more, will still even more be out of reach for many Canadians - even after any EV rebate. No matter what the cost, transportation competes with other

core expenditures - notably a downpayment on a house - that may be enabled if it can be skipped.

It is also unrealistic and inaccurate to assume that people already have a bicycle suitable for daily transportation. Much of the last 4 decades of the cycling industry has focused on racing, sports and pure recreation. Many households simply do not own a bicycle with the comfortable riding style that suits them or even the fenders that are typical of mature cycling culture. The social price is also considerable. Cycling is mainstreaming, but status will remain an issue until cycling numbers increase to the point where it is an unremarkable and normal occurrence to see large numbers of people doing so in every Canadian community. Leaving e-bikes out of a rebate on EVs for example, further makes the social price of acquiring higher because they are made to seem niche and overlooked.

By contrast to every other mode, a good-quality regular bicycle able to withstand the hardships of daily use can cost \$1000 or less and provide years of transportation with minimal annual maintenance. An e-bike will always cost a little more, but then offers payback due to the longer distances that tend to be covered. Either purchase can mean the difference between home ownership and renting, food or tuition.

Extending the proposed rebate to bicycles and e-bicycles will include far more people in the overall transition to sustainable mobility, make it fair, all while accomplishing the same goals as the EV rebate, while hastening the acceptance of cycling as a meaningful option. In short, it will make it easier to buy into another personal transportation option that also has zero emissions but offers it at a fraction of the initial capital investment and even lower annual operating costs.

Advancing Gender Equality

Women, as a group, experience transportation differently. Women tend to make more trips, over shorter distances, a larger number of which take place during off peak hours than men - conditions which are extremely well suited to transportation by bicycle. Sadly, cycling in Canada is weighted heavily towards male participation. A rebate can help change that. A rebate that extends only to personal automobiles fails to recognize the gender gap that exists for cycling in Canada and penalizes women who would prefer a sustainable form of transportation that is less dangerous to other people and/or more suited to her travel needs. In addition, right now women have less access to disposable income - that means less money to direct towards personal transportation expenditures than men. This all means that a proposed rebate only for electric automobiles will be weighted towards providing independent transportation for men who are able to/want to own a car.

Empowering Seniors in Their Communities

The 2019 budget notes that “far too many of our seniors face isolation in their retirement years” brought about “poor health, reduced mobility, poverty”. Bicycles - e-bicycles in particular which makes cycling easier while still providing the preventative health benefits of low-impact exercise - are a great equalizer especially for the elderly or those with mobile impairments. Being cheaper to buy than a bus pass and cheaper to operate than a car, means that access to a bicycle or e-bicycles helps address some of the independent mobility issues of poverty too. Lastly, seniors require social connection. Bicycles and e-bikes are proven to make people more connected to their community, more likely to connect them to their peers and surrounding social environment. E-bikes offer a special ability for seniors who already like cycling to continue to cycle at similar levels with less energy output that sometimes becomes necessary as we age.

Addressing Major Health Care Challenges

Riding a bicycle is proven to directly address a wide gamut of mental health issues - whether making social connections, reducing stress, coping with depression - and improves the ability of children to learn, and improves everyone's overall personal resiliency to deal with indirect causes of mental health issues such as unexpected poverty or personal trauma.

Making Canada Accessible and Supporting People With Disabilities

People with all forms of disabilities ride bicycles, and would greatly benefit from rebates on more complicated and expensive customized options (handcycles, tandems, tricycle/wheelchair hybrids, etc..) that are sometimes required, especially for those very specific mobility requirements. Electric assist bicycles are revolutionizing access to cycling for many persons with disabilities.

A Fair Tax System for All Canadians

A rebate on electric automobiles that does not extend to bicycles is simply unfair, and acts as a disincentive to those who choose to or must use a bicycle for personal transportation.

Appendix E. About Vélo Canada Bikes:

Vélo Canada Bikes is a membership organization representing organizations, businesses and individuals across the country who are committed to building a bike-friendly Canada. We provide policy analysis and strategic advice on sustainable transportation on topics of interest at the national level and provide Canadian advocacy organizations with a united voice.

Appendix F. European Cycling Federation Overview

From [ELECTROMOBILITY FOR ALL Financial incentives for e-cycling European Cycling Federation](#):

We suggest introducing subsidy schemes for e-bikes based on market conditions:

- In markets with low sales figures, a purchase subsidy of 500€ (around 10% of the current purchase subsidies of electric cars in many European countries) could help to bridge the price gap to conventional bikes and facilitate market uptake of electric bikes (including low-powered as well as speed pedelecs), which in its turn have a high potential to achieve modal shift from car trips to cycling.
- In more mature markets, more targeted subsidy schemes e.g. for speed pedelecs and electric cargo bikes due to their higher price or for charging infrastructure in small businesses can be an option. Subsidies for electric bikes could also be given as a reward for cancelling a car's registration. Besides these targeted purchase subsidies, which are at the centre of this report, other, more general, funding schemes for research and development or infrastructure like charging points and secure parking can also contribute to the promotion of electric cycling. In these areas, the EU could play a more active role in the promotion of electric cycling by including it in its e-mobility policies

Appendix G. Key references

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