



Priority Policies for the Advancement of Transportation Electrification in Canada

By: Electric Mobility Canada – Mobilité Électrique Canada

February 19, 2021

**Contact: Daniel Breton
President and CEO
daniel.breton@emc-mec.ca
<https://emc-mec.ca>**

Priority recommendations from Electric Mobility Canada for the electrification of Canada's transportation sector

1. Develop a Canadian electric mobility strategy to achieve Canada's climate and electrification targets
2. Support the development of a Canadian ZEV supply chain industry
3. Support Canada's zero emission vehicle (ZEV) manufacturing industry and dealerships by incentivizing consumer and fleet purchases of electric vehicles (EVs) in all vehicle classes
4. Incentivize all Canadians to buy an electric vehicle with a used EV incentive
5. Commit to Canada's ZEV targets with regulatory supply measures
6. Set and fund higher one and five-year targets for EV charging station deployment
7. Include EV charging or EV-readiness as part of energy efficiency programs
8. Significantly increase electrification of government and Crown corporation fleets
9. Support electrification of government and Crown corporation fleets by providing charging infrastructure and EV-ready requirements
10. Pre-order or bulk buy heavy-duty electric transit and school buses
11. Expand funding for ZEV education and training programs
12. Support the electrified transportation sector by investing in EMC's mission
13. Provide four-year federal guarantee for ZEV loans via the Canada Infrastructure Bank
14. Include EV-ready requirements into the Model National Building and Energy Code for Buildings
15. Accelerate timelines for Measurement Canada to approve and certify charging equipment to enable energy-based pricing for charging services
16. Support the development of a local, sustainable, circular and safe lithium-ion battery recycling industry
17. Champion Canada's mining advantage by supporting electrification at mining locations across the country and promoting sustainable mining

About Electric Mobility Canada - Mobilité Électrique Canada

EMC is a national membership-based not-for-profit organization dedicated exclusively to the advancement of electric mobility as an exciting and promising opportunity to fight climate change and air pollution while stimulating the Canadian economy. EMC's mission is to strategically accelerate the transition to electric mobility across Canada.

Established in 2006, EMC is one of the very first electric mobility associations in the world. It represents more than 200 organizations working to electrify transportation across Canada. Members representing more than 50 billion dollars a year in revenue include vehicle manufacturers, utilities, charging infrastructure manufacturers, charging suppliers and networks, technology companies, mining companies, fleet managers, unions, cities, universities, NGOs and EV owners associations.

The following recommendations were developed following months of discussion and exchange with our members who specialize in one or many aspects of the sector. They are therefore the most relevant proposals for advancing transportation electrification in Canada.

Recommendation #1:

Develop a Canadian electric mobility strategy to achieve Canada's climate and electrification targets

Now that Canada has unveiled its own hydrogen strategy, the time is right for Canada to have its own electric mobility strategy. Canada needs a comprehensive, coherent and visionary plan that includes all types and sizes of personal and commercial use vehicles from e-bikes to electric buses, from electric cars to electric trucks, from electric boats to off-road EVs, from research to infrastructure, from policy to incentives...and from BC to the Maritimes and the Canadian North. Our country's diverse regions and unique seasonal conditions make it imperative for the federal government to commit to an ambitious made-in-Canada strategy that describes *why* electrification is a generational opportunity and *how* communities, individuals and organizations can contribute towards its success.

A national strategy that engages Canada's urban, suburban, rural and remote communities will provide the focused guidance and attention necessary to help make Canada a world leader in electric mobility while also reaching its climate and electrification targets.

Budget to develop an electric mobility strategy in 2021-2022: \$1,500,000

Recommendation #2:

Support the development of a Canadian ZEV supply chain industry

The automotive sector is one of the largest manufacturing segments in Canada, including light-duty, medium-duty, and heavy-duty vehicles, as well as auto part and infrastructure manufacturing. With the global trend toward electrification and smart mobility, there is a strong need to future-proof Canada's automotive sector to ensure it retains its leadership during this critical transition. With all its assets, from resources to research, from a world-renowned automotive industry to an advanced and skilled workforce, from electric mobility companies to universities, Canada has a historic opportunity to become a world leader in sustainable mobility.

EMC is presently working with partners such as The Transition Accelerator, Dunsky Energy Consultants, the Ivey Foundation, The Atmospheric Fund (TAF) and others on a new initiative aimed at building a robust, cross-Canada Zero Emission Vehicle (ZEV) industry supply chain. Focused on ensuring Canada positions itself for the rapid transition to ZEVs currently underway, this initiative seeks to bring key players together from across the country, from mining to mobility. Electric Mobility Canada will be a reliable partner along the way in the creation of ZEV supply chain industry.

Budget for 2021-2022: \$1,000,000

Recommendation #3:

Support Canada's zero emission vehicle (ZEV) manufacturing industry and dealerships by incentivizing consumer and fleet purchases of ZEVs in all vehicle classes

According to the latest report published by Health Canada in 2019 titled "*Health Impacts of Air Pollution in Canada: Estimates of morbidity and premature mortality outcomes,*" Health Canada estimates that:

- 14,600 deaths per year can be attributed to air pollution in Canada.
- Air pollution is associated with 7.5 times the death toll from motor vehicle accidents.
- \$114 billion a year is the total annual economic cost of health outcomes associated with air pollution

Considering the fact that passenger cars, motorcycles, light trucks, large trucks and buses represented **30.5%** of total carbon monoxide emissions in Canada and **22%** of carbon nitrogen oxides emissions in Canada in 2017, we recommend, for health reasons as well as economic reasons, that the government of Canada accelerate the transition toward electric mobility for these different vehicle categories:

a) Electric transit buses:

Almost 6,500 older transit buses on Canadian roads emit between 20 and 200 times the currently allowed NOx levels. These older buses account for a significant part of Canada's air pollution in transport. That's why we recommend, for these important health reasons as well as economic reasons in Canada, that the government of Canada:

- Subsidize 85% of the price differential between an electric transit bus and a fossil fuel transit bus *instead of loans* to accelerate the transition towards electric transit buses.
- Subsidizes 50% of the cost of new electric transit infrastructure that needs to be installed for electric buses
- Make the proposed program admissible with other federal and provincial programs
- Offer financial support for three to five years for the operating costs of the transit systems to compensate for the significant drop in revenue due to COVID-19 since the current emergency fund will end soon. All analyses and studies show that the ridership will not return for two years at best, and more likely three to five years. Without such support, transit agencies may delay their transition toward electric buses.

For Québec & Ontario, support the provincial requirement for 25% of Canadian content for transit buses.

EMC understands that these supports would enable EMC's bus OEM members to:

- Maintain or grow the number of high-tech jobs (R & D, engineering, etc.) in Canada
- Ensure 5% of these funds is reinvested into Canadian Operations / Infrastructure

- Ensure 5% of these funds is invested into Canadian R&D
- Ensure in-kind support from OEMs for demonstration programs

b) Electric school buses:

Considering the fact that electric school buses offer cleaner air as well as a calmer environment due to noise and vibration reductions for students on their way to school, which translate into concrete health benefits for children, we recommend that the government of Canada:

- Subsidize 85% of the price differential between an electric school bus and a fossil fuel school bus *instead of loans*
- Subsidize 50% of electric school bus infrastructure
- Make such an incentive program stackable with other federal and provincial programs to support cleaner commutes for students and Canada's school bus manufacturing industry.

For Québec, support the provincial financial assistance program that only electric school buses assembled in Canada can be admissible.

EMC understands that these supports would enable EMC's bus OEM members to:

- Maintain and grow the number of high-tech jobs (R & D, engineering, etc) in Canada
- Ensure 5% of the contract is reinvested into Canadian Operations / Infrastructure
- Ensure 5% of the contract is invested into Canadian R&D
- Ensure in kind support from OEMs for demonstration programs

c) Other medium- and heavy-duty vehicles: Cover 85% of the price differential between a medium- or a heavy-duty ZEV for commercial use compared to an equivalent fossil fuel vehicle (e.g. semi-trailer trucks, excavators, motor graders, wheel loaders, dozers, backhoes, dumpers, waste and recycling trucks, etc.). Regional and municipal governments, in particular, can benefit from renewed fleets for the provision of critical services for their residents.

d) Passenger vehicles: Get more Canadians in ZEVs by increasing the base MSRP cut-off for the iZEV program for eligible light duty vehicles from the current \$45,000 threshold with a \$54,999 ceiling to a new \$60,000 threshold with a \$69,999 ceiling. This will help increase regional equity and access for persons who require larger vehicles such as SUVs, pickup trucks and minivans for their work and/or local context while supporting the sales of electric light duty trucks which are just coming to market. Otherwise, Canada may not get a sufficient number of these bigger EVs in Canada.

e) Passenger vehicle rebates: EMC recommends that the federal government remove the federal rebate for PHEVs with less than 50 km of electric range *or* make the rebates proportional to their official range: \$2,000 from 40 to 59km, \$3,000 from 60 to 79km, \$4,000 from 80km or more.

f) Low-speed, off road and micro electric vehicles: Offer an incentive of up to \$2,000 for low speed, off road and micro ZEVs (e.g. snowmobiles, ice cleaner, personal watercraft, rider mowers, micro cars, micro trucks, small tractors, e-bikes, e-scooters, etc.) to support better rural and urban air and water quality while supporting Canada's emerging manufacturers.

g) **Offer a "cash for clunkers" / "SCRAP-IT" style incentive:** A trade-in program for retired fossil-powered vehicles can be a useful stimulus tool to restore consumer vehicle purchasing. We believe that any such program must be focused on Canada's long-term climate objectives, meaning funds should be only available for the purchase of new or used ZEVs, transit passes or active transportation tools (e.g. bikes or e-bikes).

h) **EV conversions: Since it will take some time before Canadians can have access to new EVs in all categories, we recommend, for availability as well as environmental and economic reasons:**

- a \$5,000 rebate for the purchase for any light-duty vehicle converted from a gas or diesel to an electric light-duty electric vehicle;
- a \$10,000 rebate for the purchase for any medium-duty vehicle converted from a gas or diesel to an electric medium-duty electric vehicle; and
- a \$50,000 rebate for the purchase for any heavy-duty vehicle converted from a gas or diesel to an electric heavy-duty vehicle

i) **Implement a G/HST exemption for both new and used light ZEVs** to support equitable access to the benefits of driving electric.

Budget for light, medium- & Heavy-Duty ZEV incentives: \$1.2 billion for 2021-2022

Recommendation #4:

Incentivize all Canadians to buy an electric vehicle with a used ZEV incentive

Provide all Canadians with access to the health and economic benefits of electrified transportation by establishing the used ZEV rebate of up to \$2,000 set out in the Minister of Innovation, Science and Industry's mandate letter. We recommend that this program be stackable with any trade-in program for internal combustion engine vehicle retirement and provincial programs. When purchased, a used ZEV can displace the purchase of an internal combustion engine vehicle, helping increase overall use of ZEVs. This incentive will also help engage more Canadians of all economic backgrounds in reducing GHG emissions, and help ensure that incentives and lower cost ZEVs are equitably distributed among all Canadians.

Budget for the used EVs incentive for 2021-2022: \$12 million

Recommendation #5:

Commit to Canada's ZEV targets with regulatory measures

Light Duty Vehicles: In 2020, while light duty vehicles sales decreased in every market on the planet, EV sales increased in most markets: Europe, China, USA, South Korea, etc. During that same year, EV sales dropped in Canada. Considering the fact that Canada has set ambitious yet achievable targets for ZEV sales for 2025 (10%), 2030 (30%) and 2040 (100%), we recommend regulatory measures to support consumer and fleet supply and purchases of light duty ZEVs across Canada. These regulatory measures will establish near and long-term signals for suppliers and investors, specifically a federal vehicle supply standard in line with Canada's ZEV targets, and vehicle emissions standards aligned with California or the United States Federal Government (assuming it is as strict or stricter than that of California). In addition to making changes here, Canada can also work closely with the new US administration to achieve an ambitious North American standard.

Medium- & Heavy-Duty Vehicles: We also recommend Canada adopt a ZEV standard for Medium & Heavy-Duty Vehicles (HDVs) inspired by the new California Advanced Clean Truck Rule and the Advanced Clean Fleet Rule to help achieve Canada's Drive to Zero pledge.

Budget for regulatory measures: \$0

Recommendation #6:

Set and fund higher one and five-year targets for charging station deployment

EMC's members strongly support the additional funding announced in Canada's most recent Fall Economic Statement to add \$150 million in new ZEV infrastructure funding over 3 years (starting in 21/22) to supplement existing funding from NRCan. This investment will contribute to the build out of critical zero emissions vehicle infrastructure across Canada. Moving forward, however, bold infrastructure targets and additional investments are needed to support Canada's 2025-2040 zero emission vehicle sales goal.

NRCan's leadership on charging station deployment targets is foundational for our industry and plays a key role in both aligning government policy and encouraging private sector investment. We recommend expanding targets for the Zero Emission Vehicle Incentive Program (ZEVIP) and the Electric Vehicle and Alternative Fuel Infrastructure Deployment (EVAFID) and setting specific targets for each use case covered under these programs for the upcoming fiscal year (2021-2022) and the next five years:

ZEV Infrastructure Use Case	Charging Station Deployment Target	
	5-year	FY 21/22
Public fast charging stations (EVAFID/ZEVIP) above/beyond previous commitments	5,000	1,500
Light-duty consumer vehicle charging (public, workplace, multi-family)	30,000	10,000
Fleet vehicle charging (light-/medium-/heavy-duty)	5,000	750
Transit and school bus charging	5,000	750

If there is low coverage in particular under-served areas or types of deployment, we suggest that NRCan may need to increase funding percentages or per charger caps in those areas until coverage is adequate (e.g. prairies and rural areas). A similar approach may be required for specific use cases (e.g. Transit, Medium or Heavy Duty Fleets). Consider providing up-front payment when using a delivery partner model to disburse funds under ZEVIP or EVAFID.

Budget for 2021-2022: \$ 250 millions

Recommendation #7:

Include EV Charging as part of energy efficiency programs

EV charging can play a significant role in supporting energy efficiency since EVs are approximately three times more energy efficient than equivalent fossil-fuel powered vehicles. Furthermore, there are often important opportunities to multiply the environmental benefits of energy efficiency programs by using energy savings and surplus electrical capacity to charge vehicles. Any energy efficiency program, including those funded by the federal government, whether industrial, commercial, municipal, governmental or residential, should include the installation and purchase of EV chargers and charging stations as an eligible activity.

Renovations of older buildings:

The most cost-effective and effective way to provide existing multifamily building occupants and workplaces with access to EV charging is to undertake comprehensive “EV-ready” retrofits. The Province of BC recently introduced the CleanBC Go Electric EV Ready Incentive Program, which provides \$600 per parking space, up to \$80,000 per building, to undertake comprehensive retrofits to multifamily buildings to make at least one parking space per residential unit “EV-ready” (i.e. an adjacent electrical outlet capable of Level 2 EV charging).

EMC suggests that the Federal government augment its current EV charging incentives (e.g. the Zero Emission Vehicle Infrastructure Program), increasing funding and supporting comprehensive EV-ready retrofits to make all parking in multifamily buildings EV-ready, as well as significant portions of workplace parking. Over the life cycle of buildings, this will realize the greatest value for building residents and best enable EV adoption. These comprehensive EV-ready retrofits provide an excellent opportunity for stimulus spending as Canada recovers from the economic impacts of Covid-19.

Budget for 2021-2022: \$25 million

Recommendation #8:

Significantly increase the electrification of federal government and Crown corporation fleets

The government of Canada and its Crown corporations are major fleet operators, and it is critical for Canada to lead by example on electrification. This can be achieved by building on and ensuring achievement of meaningful fleet electrification:

- Set 100% ZEV targets for new light-duty unmodified administrative government fleet vehicle purchases starting in the 2023 financial year, wherever feasible
- Require ministerial approval for the purchase of non-ZEV light duty vehicles including for purchase of light duty vehicles without ZEV options
- Encourage Crown corporations to set and meet ambitious targets for fleet electrification for all vehicle types

- Ensure Crown corporations are admissible in the same programs that support ZEV adoption and charging station deployment as private companies (for all vehicle classes from LDVs to HDVs), on- and off-road and maritime/aeronautical equipment, etc.
- Require new vehicle purchases include total cost of ownership (TCO) calculations that reflect the operating cost savings and emission reductions of driving electric
- Abolish any lowest bidder rules that prevent or disincentivize government or Crown procurement from choosing electric vehicles.

Budget for 2021-2022: \$0 (will pay by itself through lower TCO)

Recommendation #9:

Support electrification of government and Crown corporation fleets and employee vehicles and employee vehicles by providing charging infrastructure

Canada and its Crown corporations are major parking lot owners and occupants across Canada, representing a massive opportunity to reduce operational greenhouse gas emissions and support long term cost savings.

- Install 3,000 Level 2 and DCFC (Level 3) EV chargers at federally owned parking facilities (including Crown corporations) in Fiscal 2021-2022 and 2022-2023 for fleets, employees and visitors
- Require all new or retrofitted federally owned or leased buildings to be ZEV-ready for fleets, employees and visitors, and consider opportunities to help provide combined fleet and public charging (where appropriate)
- Develop a funding mechanism (direct or indirectly via NRCan) for Crown corporations to install ZEV infrastructure.

Budget for 2021-2022: \$40 millions

Recommendation #10: Pre-order or bulk buy heavy-duty electric transit and school buses

Support Canadian manufacturing of electric school and transit buses to build up inventory of available vehicles and continue production during any COVID-19 related slowdown. Consider a swiftly implemented government bulk supply agreement, direct federal purchasing and/or working with provinces and municipalities to support immediate order entry when manufacturing resumes, helping municipalities and other administrations more quickly turn over their fleets while public transit ridership is lower. Pre-orders by the federal government would allow municipalities (who are already receiving federal funding) to take over orders when they are able to do so. Alternatively, consider a buy/lease structure.

Budget for 2021-2022: \$50 million

Recommendation #11:

Expand funding for ZEV education & training programs

Education remains a major barrier to ZEV adoption. Major societal change does not happen with technology alone. Canada needs to take ambitious steps to increase consumer and trade education about the world's changing transportation sector. To help consumers as well as current and future workers make the transition toward electrification of transportation, we propose that the federal government fund Electric Mobility Canada, in collaboration with Plug'nDrive,

Association des Véhicules Électriques du Québec (AVÉQ), EV Societies and other regional partners to coordinate and/or offer different levels of bilingual training:

- a) For consumers: Education on how to understand and use ZEVs and charging infrastructures on a daily basis and its benefits (Budget: \$4 million)
- b) For current and future workers in the electric transportation industry (including salespeople, electricians, mechanics, fleet managers, etc.) advanced training with practical sessions in: (Budget: \$6 million)
 - Light duty vehicles
 - Medium- and Heavy-Duty vehicles
 - Charging infrastructure
 - Electrical and mechanical installation
 - Electric vehicle fleet management and charging infrastructure

Total budget for education and training in 2021-2022: \$10 millions

Recommendation #12:

Support the electrified transportation sector by investing in EMC's mission

a) Strategy, research, report projects: \$1.3 million

Working in collaboration with the Federal government, EMC will create an innovative and inclusive electric mobility strategy and help develop a vibrant ZEV supply chain industry, from mining to mobility and from BC to the Maritimes and the Canadian north.

b) National and international workshops, networking, education and communications: \$350,000

With more than 200 member organizations and many contacts around the world, EMC will produce documentation and communications to educate the key players in the industry, from the private sector to Canadian governments through workshops, conferences, webinars and other means of communications.

Regarding international electric mobility relations, *EMC is a major voice and credibility that can help advance Canada's interests around the world.*

c) Mission/employees: \$350,000

To ensure that Electric Mobility Canada is as efficient as possible, we need to hire new skilled personnel to support its experienced team: 5 more employees for policy, communication and coordination

Budget for 2021-2022: \$2 million / \$6 million over 3 years

Recommendation #13:

Provide four-year federal loan guarantees for ZEV

A multi-year federal guarantee of heavy, medium and light-duty ZEV loans and associated charging infrastructure deployments by the Canada Infrastructure Bank (CIB) would catalyze critical investment in this sector, allow lenders to

collect critical data on their real residual value, providing the necessary foundation to establish more competitive financing rates and removing another key barrier to ZEV uptake.

Going further, a program whereby loans are repaid out of fleet energy savings, similar to the model being contemplated for some other infrastructure bank loans (e.g. ZEV transit), could dramatically remove downside risk for newly electric fleets and provide a critical support to fleets, such as ride hailing or taxi fleets, that have been financially impaired by ridership impacts of COVID-19.

Budget for 2021-2022: \$0

Recommendation #14:

Include EV-ready requirements into the Model National Building and Energy Code

New construction:

Requiring new buildings to be “EV-ready” has a relatively minor impact on construction costs and dramatically reduces the cost and barriers for Canadians opting to install EV charging in residential or commercial buildings. It is therefore essential to ensure that buildings, which have very long life-spans, are built for the transportation systems Canada wants and needs to meet its climate objectives. The model National Building Code of Canada and the National Energy Code of Canada for Buildings provide the critical foundation on which provinces and territories base a significant portion of their regulation of the building and renovation sectors.

In addition to its recommendations regarding retrofit funding, above, EMC suggests that model EV-ready building code provisions be included in the model National Building Code of Canada and the National Energy Code of Canada for Buildings at the earliest opportunity, so they can be implemented as part of provincial code-development cycles. EMC also recommends that these model codes incorporate best practice requirements for EV-ready new construction currently being implemented in B.C. municipalities:

100% of residential parking is required to be Level 2 EV-ready (i.e. all residential parking spaces must feature an adjacent electrical outlet capable of providing Level 2 charging. New construction may be designed to use EV energy management systems) with energy management for new multi-unit residential development, and ~20% Level 2 EV-readiness for new commercial development.

For existing buildings, EMC further encourages considerations of appropriate requirements to provide EV charging and/or EV-ready infrastructure in existing buildings as part of ongoing consideration of building code requirements on renovation/alteration of existing buildings as part of Canada’s model codes.

Budget for 2021-2022: \$0

Recommendation #15:

Accelerate timelines for Measurement Canada to approve and certify charging equipment to enable energy-based pricing for charging services

EV drivers are increasingly demanding that they be billed in ways that reflect energy actually stored rather than by time charged. This is critical for consumer fairness because not all EVs use the same amount of energy during charging. In

addition, billing by energy is critical to transparency in multi-station deployments in commercial and residential multi-unit dwellings that have only one electrical meter, and where not all users use the same amounts of energy. Furthermore, energy-based billing helps station owners more accurately account for their costs.

Currently, Canadian law prohibits the use of energy as a basis for EV charging billing because there is no standard in place to certify the meters used to measure electricity in EV charging stations, despite the fact that there are standards or guidelines in other jurisdictions and EV station meters have been shown to have high accuracy. EMC strongly supports current goals set by Measurement Canada to enable energy-based billing for EV charging (i.e. 18 months to develop these standards), and recommends that Canada take all reasonable efforts to expedite an efficient approval of standards for EV charging meters for the purpose of billing by energy delivered.

Budget for 2021-2022: \$0

Recommendation #16: Support the development of a local, sustainable, circular and safe lithium-ion battery recycling industry

With the emergence of multiple recyclers on its territory, and world-class researchers focused on new battery design and production, Canada can position itself in the battery supply chain with a full circularity approach. OEMs and battery manufacturers are looking for solutions to handle their end-of-life batteries and new sources of sustainable, responsibly-produced minerals from jurisdictions with strong environmental, social and governance standards. Challenges around recycling are emerging, including battery storage, safety and transportation to which regulators and industry should pay close attention. Europe leads the way in this effort and Canada should look to do the same as the market heads towards steep growth in battery demand and disposal. Regulating the recycling of EV batteries in Canada will not only help its environment. It will also help support the development of a Canadian battery recycling industry.

Budget for 2021-2022: \$5 million

Recommendation #17: Support the electrification of the mining industry

Canada has long been a global leader in mining finance, prospecting, development and operation. We can continue to lead by supporting the electrification of Canadian mines and related infrastructure including metallurgical operations, ports, and intermodal transportation networks. Accelerating innovation in mining creates huge opportunities for upstream (Scope 1 and Scope 2) and downstream (Scope 3) emissions reductions and supports Canada's claims to be a world leader in the provision of clean metals and minerals necessary for EV industry growth. The electrification of brownfield and greenfield mine sites, including reclaimed sites, can create sustainable procurement and employment opportunities for remote Canadian communities and workers. An added benefit is supporting the development and sale of special purpose medium and heavy-duty EVs that can, with support, be competitive on a global scale.-Canada can also provide continued leadership for sustainable mining practices in order to maintain the competitiveness of Canada's mining and electric vehicle supply chains in collaboration with the U.S.

Budget for 2021-2022: \$5 million