

SUBMISSION

September 27, 2022

B.C. Zero-Emission Vehicles Act and Regulation: 2022 Formal Review Intentions Paper

Clean Energy Canada is a climate and clean energy program within the Morris J. Wosk Centre for Dialogue at Simon Fraser University. Clean Energy Canada has strongly supported the B.C. Government in the development of [CleanBC](#) and the [CleanBC Roadmap 2030](#). Merran Smith has served as the Chair and a committee member on the Climate Solutions Council.

We are pleased to submit these comments as part of the Government of British Columbia's consultations on *B.C. Zero-Emission Vehicles Act and Regulation: 2022 Formal Review Intentions Paper* ("Intentions Paper").

British Columbia has been a Canadian leader on developing policies and programs that increase the uptake of zero-emission vehicles and a model for other provinces across the country. As a result, B.C. leads the country on ZEV market share and accounts for 25% of Canada's total ZEV sales.¹ Zero-emission vehicles cost less to fuel and maintain, saving Canadian drivers \$10,000 to \$15,000 over eight years of ownership compared to a comparable gas-powered car, according to [a 2022 Clean Energy Canada analysis](#). B.C.'s strong head start on EV adoption means more British Columbians will be able to use EVs as a way to reduce their energy bills and protect themselves from fossil fuel inflation relative to the rest of Canada—and this is only helped by B.C.'s nearly 100% clean electricity grid and some of the lowest electricity rates in the country.

In line with the actions set out in the CleanBC Roadmap to 2030 - by moving forward with a well-designed ZEV mandate, which includes the most stringent 2030 sales targets in North America, B.C. is also creating space for the federal government to implement an ambitious national ZEV mandate that will make Canada a destination for clean cars.

¹ According to [IHS Markit](#), ZEVs accounted for 16.4% of B.C.'s new car sales in the first half of 2022, compared to 7.9%, the national average.

The table below provides a summary of our feedback on the specific design elements proposed in the Intentions Paper.

Design Element	B.C. Proposed Amendments	Clean Energy Canada Comments and Recommendations
<p>2.1 - Accelerate light-duty ZEV targets.</p>	<p><i>The following changes will be made to the ZEV Act:</i></p> <ul style="list-style-type: none"> ● <i>Increase the provincial light-duty sales targets found in section 7 of the ZEV Act to 26% by 2026, 90% by 2030, and 100% by 2035.</i> ● <i>Change the prohibition year from 2040 to 2035 in section 9 of the ZEV Act.</i> 	<p>Support: Increase the provincial light-duty sales targets in section 7 of the ZEV Act to 26% by 2026, 90% by 2030, and 100% by 2035.</p> <ul style="list-style-type: none"> ● By legislating the most stringent 2030 ZEV sales target in North America, B.C. continues to show leadership on electric vehicles and creates space for the federal government to move forward with implementing an ambitious national ZEV mandate. <p>Support: Change the prohibition year from 2040 to 2035 in section 9 of the ZEV Act.</p> <ul style="list-style-type: none"> ● A growing number of cities, states, countries and automakers are moving towards 100% ZEV sales by 2035, as seen in the COP26 declaration signed by 39 countries, 13 automakers and more than 130 total signatories. The International Energy Agency’s Net Zero by 2050 Roadmap indicates that 100% zero-emission new passenger vehicle sales is an important global milestone to reach if we wish to achieve net zero emissions by 2050.
<p>2.2 - Credits per vehicle</p>	<p><i>Proposed changes to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> ● <i>Amend the ZEV Act so that beginning in model year 2026, eligible ZEVs (ZEV Class A and B) would earn 1 credit per vehicle.</i> ● <i>In model year 2026, the existing credit banks would undergo a one-time adjustment such that the existing Class A ZEV credits would be divided by 4, and existing Class B ZEV credits would be divided by 1.3.</i> 	<p>Support: Amend the ZEV Act, beginning in model year 2026, such that eligible ZEVs would earn 1 credit per vehicle. This change would simplify the compliance ratios and increase market certainty around the number of actual ZEV sales B.C. can expect to see each year.</p> <p>Proposed amendment: We support a one credit per ZEV system (versus a 1 credit for a BEV/FCEV and 0.5 credit for PHEV) so long as the following restrictions on PHEVs are put into place:</p> <ol style="list-style-type: none"> 1. To receive full credit, eligible PHEVs must have a minimum electric range of 80 km. This minimum range aligns with what Quebec is proposing in its most recent ZEV mandate regulatory proposal. While Quebec

		<p>is proposing that eligible PHEVs only receive 0.5 credits, given B.C.'s higher 2030 target, B.C. should consider granting full credit to eligible PHEVs to support compliance. It is worth noting, however, that this discrepancy in provincial systems could have unintended consequences. For instance, auto manufacturers may choose to send more PHEV supply to British Columbia where they are able to receive a full credit. While this could provide consumers in British Columbia more options, it could also result in higher overall emissions in the province. To offset increased emissions, we recommend setting limits on the percentage of compliance PHEVs can be used to meet.</p> <ol style="list-style-type: none"> There must be a declining cap on the percentage of compliance PHEVs can be used to meet. The compliance ratios in section 2.3 appear to include a declining cap on the percentage of compliance PHEVs (i.e. Class B vehicles) are allowed to meet starting in 2030. We would like to see some sort of additional signal that the B.C. government intends to phase out PHEVs entirely post-2035, similar to what the EU is planning as part of its tailpipe emission standards and what the UK is proposing in its proposed ZEV mandate design framework. Banked credits must expire after 2 years. Ensuring credits expire after a period of time will avoid an excess of PHEV credits that can continue to be used towards compliance far into the future.
2.3 - Compliance ratios	<p><i>See table in section 2.3 of the Intentions Paper.</i></p>	<p>Support: We support the simplification of the compliance ratios and the move to a one credit system, so long as the restrictions on PHEVs outlined in our response to the proposal made in section 2.2 are incorporated. We also support a declining cap on the percentage of compliance PHEVs (i.e. Class B vehicles) are allowed to meet starting in 2030 or earlier.</p>
2.4 - Medium volume suppliers	<p><i>Proposed change to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> <i>Amend the ZEV Regulation to require medium volume</i> 	<p>Support: Requiring medium volume suppliers to meet the Class A compliance ratio. Applying more stringent sales requirements to a broader group of suppliers will reduce harmful vehicle emissions and</p>

	<p>suppliers to meet the Class A compliance ratios.</p>	<p>transition B.C. more quickly towards zero-emission vehicles.</p>
<p>2.5 - Penalty for credit deficit</p>	<p><i>Proposed changes to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> Amend section 17 to increase the prescribed penalty rate from \$5,000 to \$20,000 for all model years, vehicle classes and ZEV classes from model year 2026 onward. 	<p>Support: Increase the prescribed penalty rate from \$5,000 to \$20,000 for all model years, vehicle classes and ZEV classes, starting in model year 2026. Experts have indicated that penalties of at least \$10,000 per credit deficit are required to change automaker behaviour. A penalty rate of \$20,000 also aligns with California and Quebec’s proposed approaches, which is important to avoid a situation where automakers prioritize sending EV supply to jurisdictions with higher penalties because the consequences of non-compliance in those jurisdictions are worse.</p> <p>Proposed amendment: To maintain the efficiency of the penalty overtime, it should be annually adjusted to the Consumer Price Index (CPI), as Quebec is proposing to do.</p>
<p>2.6 - Vehicle range</p>	<p><i>Proposed changes to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> Amend the vehicle definitions in section 1 of the Regulation to increase the range for ZEV types as follows for model year 2026 onward: <ul style="list-style-type: none"> Battery electric vehicle (BEV): has a minimum EPA range of 241 km. Battery electric vehicle – short range (BEV – short): has an EPA range of less than 241 km. Extended range electric vehicle (EREV): has a minimum EPA 	<p>Support: Increasing the minimum all-electric range requirements for ZEVs eligible to receive credit under the Regulation. According to BloombergNEF, the average range of new battery electric vehicle models has risen over the last several years, reaching 400km in 2021. As battery technology improves over time, it is important that credits are incentivizing models with longer electric ranges.</p> <p>For consideration: The Government of B.C. could also explore whether allowing medium range BEVs² as vehicles eligible for credit as this could address important issues such as affordability and equity. Certain automakers are exploring shorter-range BEVs with smaller batteries as a way to improve affordability and address battery mineral and material constraints.³ Further analysis would be required to determine appropriate restrictions for medium-range BEVs (i.e. minimum all-electric range</p>

² We consider a medium-range BEV to be a new vehicle class that would fall between already defined BEV and BEV-short classes. We define it as greater than a certain number of kilometers (can be determined by the B.C. government), but less than 241 km. We also interpret any BEV less than 241 km in the current proposal to be ineligible for credit.

³ For instance, Ford Motor Co [recently announced](#) it would import lower-cost lithium iron batteries for its North American electric pickup trucks and SUVs from Chinese battery champion CATL, which typically deliver less driving range than comparable batteries that use nickel and cobalt, but could allow Ford to drop prices for the Lightning and Mach-E, and boost profit margins.

	<p><i>range of 241km.</i></p> <ul style="list-style-type: none"> ○ <i>Extended range electric vehicle – medium range (EREV – medium): has a minimum EPA range of 80 km and a maximum EPA range of less than 241 km.</i> ○ <i>Extended range electric vehicle – short range (EREV – short): has an EPA range of less than 80 km.</i> ○ <i>Fuel cell electric vehicle (FCEV): has a minimum EPA range of 241 km.</i> ○ <i>Fuel cell electric vehicle – short range (FCEV – short): has an EPA range of less than 241 km.</i> ○ <i>Plug-in hybrid electric vehicle (PHEV): has a minimum EPA all-electric range of 80 km.</i> ○ <i>Plug-in hybrid electric vehicle – short range (PHEV – short): has an EPA range of less than 80 km.</i> ○ <i>The Province is interested in comments on each type of vehicle and range proposed. For example, is it still necessary to have an EREV category.</i> 	<p>requirements; whether they should receive full or partial credit under the Regulation; whether they should be subject to a compliance cap, similar to PHEVs; etc) to ensure automakers are still incentivized to invest in technologies that increase the all-electric range of new ZEV models.</p>
<p>2.7 - New vehicle requirements</p>	<p><i>Require that to be an eligible ZEV under the Act and Regulation the vehicle must have:</i></p> <ul style="list-style-type: none"> ● <i>an on-board charger with a size of 5.76kW;</i> ● <i>a convenience charging cord that is capable of both level 1</i> 	<p>Proposed amendment: Require that to be an eligible ZEV under the Act and Regulation the vehicle must have:</p> <ul style="list-style-type: none"> ● an on-board charger with a size of 5.76kW; ● a portable level 1 EVSE that shall be made available as an option at time-of-purchase

	<p>and level 2 charging and is at least 20 feet in length; and</p> <ul style="list-style-type: none"> • DCFC capability with vehicle connectors that conform with the Combined Charging Standard. 	<ul style="list-style-type: none"> • <u>or</u> provided with the vehicle at delivery. • DCFC capability of any type. <p>Comments:</p> <p><u>DCFC Capability</u> Vehicles should be equipped with DCFC capability to ensure a high degree of usability/utility for those vehicles and to encourage more uptake of ZEVs. However, there should be no requirement to meet any specific technical charging standard, so long as DCFC is equipped. Today, Tesla-standard connectors are the most prevalent standard deployed for DC Fast Charging in the province, followed by CCS. (source: NRCan)</p> <p><u>Portable EVSE (Charging cord)</u> <u>Real usage</u> of EVs has shown that the convenience charging cord (which we take to actually mean a portable EVSE, rather than a European Level-2 convenience cord) is rarely used, especially in the case of BEVs. Requiring one for every vehicle could lead to additional electronic waste. When used frequently, such as with many PHEVs, plugging and unplugging from the wall outlet can lead to premature degradation as these EVSEs are generally not built for intense use but rather for ad hoc situations. At most, this element should thus be a required option at purchase, but not a required equipment for all EVs sold. By making this feature an option consumers can save money by not selecting it when not needed. Costs of such equipment would otherwise be passed through to the consumer, increasing purchase prices.</p> <p>In addition, level 2 charging station manufacturers offer different options addressing the various charging needs of EV drivers, including smart functions that will play an essential role in grid management as EV adoption ramps up. In addition, the higher power requires adequate electrical installation that meets safety standards. Level 2 charging should remain a separate purchase in which buyers select a product that meets their needs and can be installed and used safely.</p> <p>Finally, this requirement would run counter to the</p>
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<p>2.8 - Vehicle weight</p>	<p><i>Proposed changes to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> • <i>Amend the definition of ‘light-duty motor vehicle’ to increase the gross vehicle weight rating to 4,536 kgs or less.</i> 	<p>Support: Increasing the gross vehicle weight rating for light-duty vehicles to 4,536 kgs from 3,856 kgs.</p> <p>Proposed amendment: Review the maximum gross vehicle weight for light-duty vehicles every 2 - 3 years to ensure that the maximum gross vehicle weight thresholds are still appropriate in light of vehicle and battery size trends. For instance, certain vehicles like SUVs and pickup trucks have significantly increased in size (and weight) over the last decade. As technology for longer electric ranges continues to develop, batteries are also getting bigger and heavier. This means that a newer model of a vehicle that was once considered a “light-duty vehicle” may no longer come in under the weight threshold and would therefore go unregulated if weight thresholds are not updated. While battery sizes and ranges will likely plateau as ranges reach an optimal distance, it will be important to ensure the widest breadth of ZEV models are included within the regulation.</p> <p>There have also been instances where automakers take advantage of “compliance loopholes” and re-design vehicles such that they fall under less stringent regulations or outside of regulation altogether. A regular review of weight thresholds will help avoid and address these issues.</p> <p>In addition, if B.C. adopts a zero-emission medium- and -heavy duty vehicle sales mandate (similar to California’s Advanced Clean Truck Act), the rules under both policies must specify which vehicles can be used for compliance under the B.C. LDV ZEV mandate, the B.C. MHDV ZEV mandate, or either (but not both to avoid double counting).</p>
<p>2.9 - Registration and sales requirements</p>	<p><i>Proposed changes to the ZEV Act:</i></p> <ul style="list-style-type: none"> • <i>Require that for a ZEV to receive credits under the ZEV Act and Regulation the vehicle must be delivered for retail sale or lease in B.C. for the first time (and not</i> 	<p>Support: Removing the sale of used EVs as a compliance pathway under the ZEV Act and Regulation. One of the best ways to grow the used ZEV market is by increasing the sale of new ZEVs. Moreover, B.C. is already supporting the sale of used ZEVs through its recently introduced provincial sales tax exemption and is experimenting with other ways</p>

	<p><i>previously sold in another jurisdiction) and be registered in B.C.</i></p> <ul style="list-style-type: none"> ○ <i>The same requirements would apply for suppliers to report their total light-duty vehicle sales with the exception of the registration requirement.</i> ● <i>Amendments would be required to the definition of consumer sale to capture these changes.</i> 	<p>to reach lower- and middle-income buyers, such as new income thresholds for the provincial ZEV purchase incentive.</p>
<p>2.10 - ZEV sales forecast</p>	<p><i>Proposed changes:</i></p> <ul style="list-style-type: none"> ● <i>Starting in compliance year 2023, require all medium and large suppliers to provide three years of ZEV sales forecast data annually as part of their model year reporting requirements.</i> ● <i>This data will be kept confidential to government.</i> 	<p>Support: Starting in compliance year 2023, requiring all medium and large suppliers to provide three years of ZEV sales forecast data annually as part of their model year reporting requirements.</p> <p>Proposed amendment: While we understand that individual company data must be kept confidential, we recommend the B.C. government provide aggregate sales data⁴ to the public to improve transparency and support research and data-based decision making.</p>
<p>2.11 - Reporting for small volume suppliers</p>	<p><i>Proposed changes to the ZEV Act:</i></p> <ul style="list-style-type: none"> ● <i>For the next compliance period, require that all small volume suppliers annually submit a report that includes their total light-duty vehicle sales and their total ZEV sales for the year to the Province. This report would be subject to the same auditing provisions as model year and supplementary reports.</i> 	<p>Support: Requiring small volume suppliers to submit an annual report detailing their total ZEV sales in the province. This is a positive step in the right direction and gets small volume suppliers beginning to think about compliance.</p> <p>Proposed amendment: We would like to see the B.C. government signal a future year in which small volume suppliers will also be required to comply with ZEV sales requirements under the Act.</p> <p>For example, California’s ZEV mandate indicates that small volume suppliers will eventually be expected to comply starting in 2035. Extending the ZEV Act’s application to all vehicle manufacturers will be necessary if B.C. is to meet 100% ZEV sales by 2035 and net-zero emissions by 2050.</p>

⁴ We assume aggregate data in the sense that no one individual manufacturer could be identified from the data that has been made public.

<p>2.14 - Encouraging affordable ZEVs for carsharing</p>	<p><i>Proposed change to the ZEV Regulation:</i></p> <ul style="list-style-type: none"> • <i>Amend section 15 of the Regulation to include the sale of ZEVs to co-operative owned car share programs in B.C. at 25% or higher off the MSRP.</i> 	<p>For clarification: Section 15 is about initiative agreements, but if a co-operative car share program buys a vehicle (regardless of price) and registers it in B.C., the vehicle would presumably generate ZEV credits as a direct sale. Would this amendment lead to double counting of credits, for the direct ZEV sale and for the initiative agreement?</p> <p>For consideration: A focus on carsharing may not be the most effective way to increase ZEV affordability. Studies indicate that car sharing programs are generally used by urban populations and predominantly males. While electrifying these fleets may have emission reduction benefits (due to their higher vehicle kilometers traveled) and expose users to the benefits of electric vehicles, B.C. will likely need to rely on other affordability measures to reach less urban and more diverse demographics.</p> <p>B.C. may also consider other affordability measures to reach less urban and more diverse demographics, such as:</p> <ol style="list-style-type: none"> 1. Making medium-range, less-expensive BEVs eligible for credit (as recommended above in section 2.6). 2. Exploring special bonus credits for efforts made to make ZEVs more available and accessible to low/middle income and/or rural, northern and indigenous communities (modeled after “Environmental Justice Credits” under California’s ZEV mandate). <p>Ultimately, growing the new EV market through a ZEV mandate is one of the best ways to reach economies of scale, reduce the upfront cost of EVs and grow the used EV market. A ZEV mandate focused on new EVs can also be coupled with other demand-side measures that address EV affordability, such as the recent income caps for purchase incentives and PST exemptions for used EVs the B.C. government recently introduced.</p>
<p>Other - Declining cap on credit banking</p>	<p><i>In addition to the above mentioned amendments.</i></p>	<p>Proposed amendment: We strongly recommend that the B.C. government amend the ZEV Act and Regulation to impose a declining cap on the percentage of compliance banked credits can be used to meet starting at 25% in 2024 and going down to 0% by 2034.</p>

		<p>Placing limits on credit banking would align B.C. with other leading ZEV mandate jurisdictions. For instance, Quebec limits credit banking to 25% of an automaker’s compliance obligation in 2022 and reduces that limit to 0% after 2033. Meanwhile, the UK proposes that no banking be allowed at all in its proposed ZEV mandate design.</p>
Other - Expiration of banked credits	<i>In addition to the above mentioned amendments.</i>	<p>Proposed amendment: We strongly recommend the B.C. government amend the ZEV Act and Regulation to require that banked credits expire after two years and phase out credit banking entirely after 2033.</p> <p>Placing limits on credit banking would align B.C. with other leading ZEV mandate jurisdictions. For instance, California’s final ZEV mandate allows credits to be banked for up to four years but phases some credit banking out starting in 2029 and all credit banking out starting in 2032. Quebec allows credit banking for up to three years before banked credits expire. The United Kingdom’s latest proposal does not allow any credit banking at all.</p> <p>Experts note that banked credits from previous years being used to meet stricter compliance obligations in later years could risk missing 2030 and 2035 ZEV sales targets. Considering British Columbia has the most ambitious targets for 2030 in North America, not having an expiry date on credits could jeopardize the province’s ability to meet its targets.</p>
Other - phase out of purchase agreements as compliance pathway	<i>In addition to the above mentioned amendments.</i>	<p>Proposed amendment: The Government of B.C. should phase out alternative compliance pathways such as purchase agreements in later years of the Regulation—similar to what California is planning for post-2031—to ensure most, if not all, compliance obligations are being met through the direct sale of new, light-duty ZEVs by 2035.</p>
Other - phase out of initiative agreements as compliance pathway	<i>In addition to the above mentioned amendments.</i>	<p>Proposed amendment: The Government of B.C. should phase out alternative compliance pathways such as initiative agreements in later years of the Regulation—similar to what California is planning for post-2031—to ensure most, if not all, compliance obligations are being met through the direct sale of new, light-duty ZEVs by 2035.</p>

We thank you for the opportunity to respond to this consultation, and would be pleased to answer questions or discuss our recommendations further.

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