

SUBMISSION

January 21, 2022

Achieving a Zero-Emission Future for Light-Duty Vehicles

Clean Energy Canada is a climate and clean energy program within the Morris J. Wosk Centre for Dialogue at Simon Fraser University.

We are pleased to submit these comments as part of the consultations on “*Achieving a Zero-Emission Future for Light-duty Vehicles*” in Canada. Our comments focus on the following subset of the questions for which Environment and Climate Change Canada (ECCC) is soliciting input:

1. What should be the approach to achieving 100% in 2035, including zero-emission vehicle (ZEV) sales of at least 50% in 2030?
2. In addition to ZEV sales targets of at least 50% by 2030 and 100% by 2035, are additional interim targets needed to allow Canada to succeed? What should those targets be?
3. The Government of Canada will be mandating the sale of ZEVs. How should this be designed and what should be considered to ensure its success? What are the mechanisms in other jurisdictions’ mandatory ZEV regulations that should be used or avoided?
4. What role should plug-in hybrid electric vehicles (PHEVs) play in achieving the 100% ZEV sales target?
5. What issues impede adoption of ZEVs in Northern and remote communities and by low-income households? How can the government address these issues?
6. In addition to the measures already implemented by the Government, are there other actions the Government should explore to complement the regulated sales mandate?
7. Should the Government scale up its existing efforts on incentives, infrastructure, and awareness and what are the priorities?
8. Should Canada explore other options to close the price gap between ZEVs and ICE vehicles, including feebates or measures that prevent higher leasing and lending rates for ZEVs?
9. Should Canada’s Excise tax on Fuel-Inefficient Vehicles (Green Levy) be modernized to better align with climate objectives (e.g. include a wider range of vehicles?)
10. What role does Canada’s critical minerals and battery supply chain have in helping Canada achieve its ZEV targets?

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Summary

Canada is not on track to meet its zero-emission vehicle sales goals or greenhouse gas emission (GHG) reduction targets under existing policies. A lack of ZEV supply in Canada continues to be a key barrier to uptake, especially outside of Quebec and British Columbia. While global ZEV supply and variety are expanding rapidly, automakers are prioritizing other markets where they are required to sell more ZEVs. A policy approach that relies on standards to reduce tailpipe emissions makes Canada fully dependent on regulatory, legal, and electoral outcomes in the U.S.—a country with lower ZEV ambitions. Therefore, the federal government must move forward with its commitment to enact a national ZEV standard.

A national ZEV standard will drive faster ZEV uptake over the next decade and ensure Canada meets its current 2030 and 2035 sales targets by making ZEVs more available across the country. It would allow Canada to meet its GHG emission reduction targets by 2030, even if there were no post-2026 vehicle emission standards in place—and would do so at *a lower cost per tonne* to industry and consumers than an approach that relies on vehicle emission standards alone (as well as an approach that combines a ZEV standard with vehicle emission standards). A ZEV standard provides an insurance

policy against a scenario in which the U.S. is unable to implement sufficiently ambitious post-2026 vehicle emission regulations, and will ensure Canada continues to attract ZEV supply in the event that President Biden’s proposed \$12,000 tax credit for U.S. union-made ZEVs is enacted. Finally, a ZEV standard with annual requirements provides the market certainty industry stakeholders need for planning and investments.

We recommend that the federal government **enact a national zero-emission vehicle standard** that includes the following design elements:

Design Element	Recommendation
Annual ZEV sales requirements	20% ZEV sales by 2025, 25% by 2026, 65% by 2030, 100% by 2035.
Types of ZEVs eligible to earn credits	Battery electric, plug-in hybrid electric (with min 80km all-electric range), and hydrogen fuel cell vehicles are eligible. Conventional hybrids and used ZEVs are not eligible.
Credit allocations	One credit per zero-emission vehicle sold.
Bonus credits for sales in Northern/remote communities	Award bonus partial credits for original equipment manufacturer (OEM) efforts that increase ZEV sales in these communities.
Early action credits	Early action credits must not be permitted.
Penalties	\$10,000 to \$20,000 per credit deficit. Reinvest proceeds into charging infrastructure and purchase incentives.
Interaction with provincial ZEV standards	Acts as a “backstop” for provinces that do not have equal or more stringent mandatory ZEV standards in place.
Timing	Finalize regulation by 2023; implement it to begin taking effect with model year 2024.

In addition to a national ZEV standard, we recommend the federal government **prioritize four complementary measures:**

1. Refund the iZEV program and make SUVs, pickup trucks and used vehicles eligible.
2. Pursue a variety of measures to accelerate the build out of Canada’s public charging network and increase access to home charging.
3. Limit compliance flexibilities in the pre-2025 U.S.-Canada vehicle emission standards, including by eliminating ZEV multiplier credits.
4. Develop a national battery strategy in coordination with industry that focuses efforts and guides policies and investments.

Why Canada needs a ZEV standard

Canada is not on track to meet ZEV sales or GHG targets under current policies

Canada's existing clean car policies are not sufficient to meet our ZEV sales targets or our GHG emission reduction targets, according to fall 2021 modeling conducted by Dr. Jonn Axsen and the Sustainable Transportation Action Research Team (START) at Simon Fraser University.¹ The analysis found that even with the most optimistic assumptions (i.e. low battery prices, high gasoline prices, positive consumer preferences, and full deployment of charging infrastructure), existing policies fall far short of Canada's targets.

ZEV supply is still limited, especially outside of B.C. and Quebec

While a recent study commissioned by Transport Canada found an 81% increase in ZEV supply between 2020-2021, supply in Canada is still limited.² A majority (55%) of dealerships don't have a single ZEV in stock.³ Outside of B.C., Quebec, and Ontario, this percentage rises to an astounding 82% of dealerships with no ZEV inventory at all.⁴ Wait times are also high, with 64% of Canadian dealerships surveyed reporting wait times of 3-6 months or more before a prospective buyer can drive their new ZEV home.⁵ Only a couple of OEMs are doing the heavy lifting by increasing supply, namely Hyundai and Kia.⁶ Regulatory action is required to ensure other automakers step up to meet growing demand and ensure Canadians have access to a broad range of ZEV makes and models to choose from.

Some of these supply constraints may of course be attributed to COVID-19 supply chain issues, so a comparison across provinces is a helpful way to look at results as well. ZEV supply continues to be unfairly distributed across provinces, with B.C. and Quebec being home to 71% of all ZEVs available for sale on Canadian dealership lots.⁷ Those two provinces also have many more ZEVs available per person (see Figure 1 below), since several automakers focus the vast majority of their inventory there, including Volkswagen (83%), Kia (86%), Honda (86%), and Ford (98%).⁸

¹ Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation). The analysis modeled Canada's existing policies as of September 2021 and looked at Canada's 2030 and 2035 EV sales targets, as well as its economy-wide 2030 GHG reduction target applied to the portion of national emissions passenger vehicles are responsible for.

² Dunsky Energy and Climate. *Zero emission vehicle availability: Estimating inventories in Canada: 2020/2021 update*. https://www.dunsky.com/wp-content/uploads/2021/12/DunskyZEVAvailabilityReport_2021-04-1.pdf (2021).

³ Ibid.

⁴ Ibid.

⁵ Ibid.

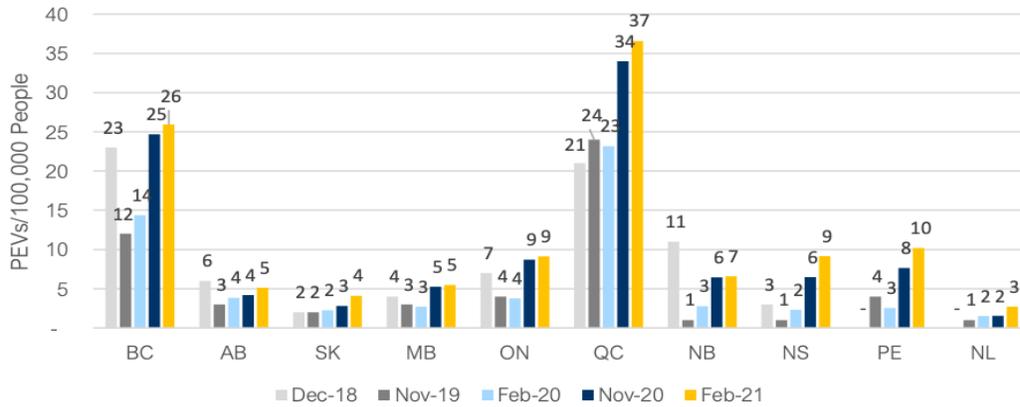
⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

While a growing number of provinces and territories have now introduced ZEV rebate programs, B.C. and Quebec are the only two provinces with both consumer incentives *and* ZEV standards in place.

Figure 1. ZEVs available for purchase per 100,000 people, by province



Source: Dunsky Energy, 2021

Automakers are prioritizing other markets where they are required to sell more ZEVs

Global automakers are pouring half a trillion dollars into ZEV and battery development over the next five years.⁹ Responding to increasing ZEV demand and government policy, automakers are launching new ZEV makes and models at a rapid pace. By the first half of 2021, there were 522 ZEV models available around the world, up from 380 electric vehicle (EV) models at the end of 2019.¹⁰

The U.S. significantly lags behind China and the EU when it comes to model availability. By the end of 2020, there were 355 ZEV models available in China, compared to 230 in Europe and just 83 in the U.S.¹¹ Canada appears to be even further behind, with only 66 ZEV models available at the end of 2021.¹²

This discrepancy in model availability—and ZEV sales more generally—is because automakers prioritize ZEV sales in regions with stringent emission standards or ZEV standards. According to BloombergNEF, Europe and China are responsible for the vast majority of global ZEV sales (82% in

⁹ Lienert, P & Bellon, T. Exclusive: Global carmakers now target \$515 billion for EVs, batteries. *Reuters*. [https://www.reuters.com/business/autos-transportation/exclusive-global-carmakers-now-target-515-billion-evs-batteries-2021-11-10/#:~:text=Nov%2010%20\(Reuters\)%20%2D%20Global.meeting%20increasingly%20tough%20decarbonization%20targets.\(2021\).](https://www.reuters.com/business/autos-transportation/exclusive-global-carmakers-now-target-515-billion-evs-batteries-2021-11-10/#:~:text=Nov%2010%20(Reuters)%20%2D%20Global.meeting%20increasingly%20tough%20decarbonization%20targets.(2021).)

¹⁰ BloombergNEF. *Zero-Emission Vehicles Factbook: A BloombergNEF special report prepared for COP26*. https://assets.bbhub.io/professional/sites/24/BNEF-Zero-Emission-Vehicles-Factbook_FINAL.pdf (2021).

¹¹ Ibid.

¹² By the Numbers: A look at electric vehicle sales in Canada. *The Canadian Press*. [https://nationalpost.com/pm/n/news-pmn/canada-news-pmn/by-the-numbers-a-look-at-electric-vehicle-sales-in-canada\(2021\).](https://nationalpost.com/pm/n/news-pmn/canada-news-pmn/by-the-numbers-a-look-at-electric-vehicle-sales-in-canada(2021).)

2020 and 84% in the first half of 2021).¹³ These two regions are also seeing significantly higher ZEV sales shares: 15% and 21% of passenger vehicles sold in China and Europe, respectively, were electric in 2021, in contrast to just 4% in the U.S.¹⁴

The BloombergNEF report went on to say:

“Europe and China have some of the most stringent fuel economy targets in place globally, [and] meeting them implies significantly increasing sales of electric vehicles. Automakers active in these two regions are thus strongly induced to launch new ZEV models, and make them attractive to consumers.”

Indeed, analysts from BloombergNEF to Ernst & Young have stated that weak supply-side policies and fewer models to choose from are among the top reasons the U.S. and Canada lag China and Europe in ZEV deployment.¹⁵

A policy approach that relies on the U.S.-Canada vehicle emission standards alone is insufficient

The U.S. Environmental Protection Agency (EPA) released its final “Revised 2023 and Later Model Year Light-Duty Vehicle GHG Emissions Standards” in December 2021.¹⁶ These rules, which automatically apply in Canada, are more stringent than the draft EPA rules proposed in August 2021, and will play an important role in Canada’s baseline policy mix by driving near-term GHG emission reductions in internal combustion engine vehicles. But as the EPA indicates, “conventional powertrains” are expected to make up most of the compliance pre-2026, and the U.S. will rely on post-2026 regulations to do the heavy lifting on ZEVs.¹⁷ Indeed, the EPA expects these final rules to deliver only 17% ZEV sales by 2026.¹⁸ With mandatory targets of at least 50% ZEV sales by 2030 (just four years later) and 100% by 2035, Canada needs additional measures to reflect and achieve its greater ZEV ambitions.

¹³ BloombergNEF. *Zero-Emission Vehicles Factbook: A BloombergNEF special report prepared for COP26*. https://assets.bbhub.io/professional/sites/24/BNEF-Zero-Emission-Vehicles-Factbook_FINAL.pdf (2021).

¹⁴ Sales of New Energy Vehicles in December 2021. *China Association of Automobile Manufacturers*. <http://en.caam.org.cn/Index/show/catid/54/id/1656.html> (2021); Rybczynska, A. Global EV Sales on Track to Hit Record 6.3 Million in 2021: BNEF. *Bloomberg*. <https://www.bloomberg.com/press-releases/2021-12-15/global-ev-sales-on-track-to-hit-record-6-3-million-in-2021-bnef> (2021).

¹⁵ BloombergNEF. *Zero-Emission Vehicles Factbook: A BloombergNEF special report prepared for COP26*. https://assets.bbhub.io/professional/sites/24/BNEF-Zero-Emission-Vehicles-Factbook_FINAL.pdf (2021); China, Sweden and Germany lead the way on the EY Electric Vehicle Country Readiness Index. *Ernst & Young Global Ltd*. https://www.ey.com/en_gl/news/2021/11/china-sweden-and-germany-lead-the-way-on-the-ey-electric-vehicle-country-readiness-index (2021).

¹⁶ U.S. Environmental Protection Agency. *Revised 2023 and Later Model Year Light-Duty Vehicle GHG Emissions Standards: Regulatory Impact Analysis*. <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P1013ORN.pdf> (2021).

¹⁷ “While we anticipate that the revised standards will be met primarily through the continued penetration of conventional powertrain (e.g., internal combustion engine, transmission) improvements and road-load reductions ... we anticipate that the design of a future, longer-term program beyond 2026 will further incorporate accelerating advances in zero-emission technologies.” *Ibid*.

¹⁸ *Ibid*.

Moreover, a policy approach that relies on the U.S.-Canada vehicle emission standards alone makes Canada dependent on regulatory, legal, and electoral outcomes in the U.S.

A national ZEV standard will ensure Canada meets its ZEV sales and GHG emission reduction targets in the most cost-effective way

The federal government must move forward with its commitment to enact a national ZEV standard. A national ZEV standard will drive faster ZEV uptake over the next decade, achieve additional emission reductions, and ensure Canada meets its 2030 and 2035 sales targets by making ZEVs more available across the country. It also provides an insurance policy against a scenario in which the U.S. is unable to implement sufficiently ambitious post-2026 vehicle emission regulations, or does implement them but a future president decides to roll them back. Finally, a ZEV standard will ensure Canada continues to attract ZEV supply in the event that President Biden is able to enact the proposed \$12,000 tax credit for U.S. union-made ZEV's.

With respect to GHG emission reductions, a ZEV standard can get us to where we need to be by 2030. Modeling and analysis by Dr. Jonn Axsen and SFU START, which compared policy pathways (e.g. vehicle emission standards, ZEV standard, feebate, and combinations of these), found that a national ZEV standard would allow Canada to meet its GHG emission reduction targets by 2030 (51 Mt or 40% below 2005 levels for light-duty vehicles) even if there were no post-2026 vehicle emission standards in place.¹⁹ What is more, a ZEV standard would achieve this at a lower cost per tonne to industry and consumers than an approach that relies on vehicle emission standards alone to get to 100% ZEV sales by 2035.²⁰ The report notes that “the ZEV mandate’s cost-effectiveness stems from its direct focus on the ZEV sales goal and the range of strategies it allows automakers to use to comply (e.g. research and development [R&D] investment, cross-price subsidies, increased vehicle variety, and increased charging availability).”

In the event that the EPA is able to put ambitious post-2026 vehicle emission rules in place, Canada’s passenger vehicle emissions would fall even further, and OEMs operating in Canada will be well-placed to comply with little effort and at a low cost because they were already operating under our ZEV standard. Indeed, the modeling study referred to above found that an approach that combines a ZEV

¹⁹ The model used specializes in estimating the impact of transportation policies on the light-duty vehicle sector by simulating interactions between behaviorally-realistic consumers and an aggregate profit maximizing automaker. It is designed to represent the Canadian auto industry at the aggregate level and assumes OEMs will act in ways that maximize profits over the planning horizon by making decisions about R&D investments, adjusting relative prices of vehicles, etc. Note that these modeling results incorporated the EPA’s draft Revised 2023 and Later Model Year Light-Duty Vehicle GHG Emissions Standards, and not the final rule published in December 2021. The modelling results also do not account for the impact of EV multipliers or other compliance flexibilities contained in the EPA’s draft rule.

²⁰ Specifically, the modeling report concluded that:

- Relying on vehicle emission standards alone achieves GHG reductions of 32% in 2035 at \$283/tonne compared to a baseline scenario consisting of current policies in place in Canada (as of September 2021).
- Relying on a ZEV mandate alone achieves GHG reductions of 25% in 2035 at \$268/tonne compared to the baseline scenario (this assumes the ZEV mandate would include no limits on the percentage of PHEVs sold).
- Combining both a ZEV mandate with vehicle emission standards achieves GHG reductions of 47% in 2035 at \$275/tonne compared to the baseline scenario.

standard with vehicle emission standards to reach our 2035 ZEV sales targets is also more cost-effective than an approach that relies on vehicle emission standards alone.²¹

A ZEV standard provides a better alternative for Canada than Norway’s approach

Norway is a world leader when it comes to ZEV market share and seeks to become the first to end the sale of petrol and diesel engines by 2025.²² In 2021, 65% of new car sales were electric.²³ In 2022, EV sales are projected to be as high as 80% of all new cars.²⁴

Automakers argue that Norway has been able to reach high levels of ZEV penetration without a ZEV standard, and so Canada does not need a ZEV standard either.

First, Norway has relied on substantial fiscal incentives, some that have been in place for decades. These include:²⁵

- Exemption from vehicle registration tax for new ZEVs and used ZEVs
- Exemption from annual ownership tax
- Exemption from fuel tax
- Exemption from value added tax on purchase and leasing
- Partial or full exemptions from road tolls
- Significantly reduced ferry fares
- Access to bus lanes
- Free public parking
- Lower company car rates
- Government support for charging infrastructure
- Free charging in public parking lots
- Consumer subsidies

These incentives make most ZEV models cheaper to buy compared to a similar gas model—even if the import price for ZEVs are much higher—because registration and value added taxes in Norway can be up to half the pre-tax vehicle purchase price.²⁶ But this approach also comes with drawbacks: for instance, the Norwegian finance ministry estimates that these tax exemptions cost the state 30 billion crowns (\$3.41 billion) in lost revenue last year.²⁷ A ZEV standard, on the other hand, requires no direct

²¹ Aksen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation).

²² Klesty, V. With help from Tesla, nearly 80% of Norway's new car sales are electric. *Reuters*.

<https://www.reuters.com/business/autos-transportation/tesla-pushes-norways-ev-sales-new-record-2021-10-01/> (2021).

²³ Klesty, V. Electric cars hit 65% of Norway sales as Tesla grabs overall pole. *Reuters*.

<https://www.reuters.com/business/autos-transportation/electric-cars-take-two-thirds-norway-car-market-led-by-tesla-2022-01-03/> (2022).

²⁴ Ibid.

²⁵ The incentives have been gradually introduced by different governments and broad coalitions of parties since the early 1990s to speed up the transition. Fridstrøm, L. The Norwegian vehicle electrification policy and its implicit price of carbon. *Sustainability* 13(3), 1346 <https://www.mdpi.com/2071-1050/13/3/1346/htm> (2021).

²⁶ International Energy Agency. *Global EV Outlook 2021*.

<https://iea.blob.core.windows.net/assets/ed5f4484-f556-4110-8c5c-4ede8bcb637/GlobalEVOutlook2021.pdf> (2021).

²⁷ Klesty, V. Electric cars hit 65% of Norway sales as Tesla grabs overall pole. *Reuters*.

<https://www.reuters.com/business/autos-transportation/electric-cars-take-two-thirds-norway-car-market-led-by-tesla-2022-01-03/> (2022).

government expenditure—a feature that is particularly appealing at a time when governments are dealing with competing funding priorities.

Second, it's inaccurate to suggest Norway has not also implemented supply-side policies to drive its ZEV transition. The EU tailpipe emission standards also apply in Norway, which are so stringent they effectively require the sale of zero-emission vehicles to comply.²⁸ For the reasons described above, Canada must not pursue an approach that relies on vehicle emission standards alone and must instead move forward with a ZEV standard.

How to design a ZEV standard

Include ambitious interim requirements starting in 2025

When the Government of Canada announced in June 2021 it would require 100% of car and passenger truck sales be zero-emission by 2035, it also made a commitment to revisit Canada's interim 2025 and 2030 ZEV sales targets.²⁹ A national ZEV standard must include strong annual ZEV sales requirements en route to 100% ZEV sales by 2035—as all other ZEV standards implemented in North America do. Interim requirements starting in 2025 are necessary for Canada to meet its policy objectives of increasing ZEV supply, evening out ZEV supply across provinces, maximizing GHG reductions by 2030, and providing market certainty to guide private sector planning and investments.

If Canada fails to enact ambitious requirements pre-2030, automakers may delay investments and continue to prioritize other markets where they are required to sell ZEVs while maximizing internal combustion engine vehicle profits in Canada while they still can. We saw this delay play out in the EU, where automakers ramped up efforts only in 2020 to meet the incoming mandatory CO₂ emissions target of 95 g/km, but not in the years prior. See Table 1 below.

²⁸ Mock, P. & Díaz, S. *Pathways to Decarbonization: The European Passenger Car Market in the Years 2021-2035*. <https://theicct.org/sites/default/files/publications/decarbonize-EU-PVs-may2021.pdf> (2021); Fridstrøm, L. The Norwegian vehicle electrification policy and its implicit price of carbon. *Sustainability* 13(3), 1346 <https://www.mdpi.com/2071-1050/13/3/1346/html> (2021).

²⁹ Building a Green Economy: Government of Canada to Require 100% of Car and Passenger Truck Sales be Zero-Emission by 2035 in Canada. *Transport Canada*. <https://www.canada.ca/en/transport-canada/news/2021/06/building-a-green-economy-government-of-canada-to-require-100-of-car-and-passenger-truck-sales-be-zero-emission-by-2035-in-canada.html> (2021).

Table 1: Year-over-year ZEV sales share in the EU plus select countries

	EU	Germany	France	U.K. ³⁰
2019	3% ³¹	3% ³²	3% ³³	3.7%
2020	11% ³⁴	14% ³⁵	12% ³⁶	10.7%
2021	21% ³⁷	24% ³⁸ (YTD as of Sept 2021)	16% ³⁹ (YTD as of Sept 2021)	18.6%

Automakers have explicitly stated that they need to keep selling higher polluting vehicles to fund their transition to ZEVs.⁴⁰ Vehicle sales trends and marketing analysis show that Canadians are already being pushed to buy larger, more polluting vehicles through aggressive marketing campaigns. A March 2021 report by Equiterre found that 79% of automotive ads in Canadian newspapers and magazines promote light-duty trucks versus sedans.⁴¹ A national ZEV standard must require ambitious action in the near-term to avoid a situation in which Canada is funding automakers' ZEV transition and ZEV sales elsewhere until our 2030 requirement kicks in—and shouldering the air pollution and GHG emission impacts that come with that.

³⁰ The EU CO₂ vehicle emission regulations applied in the UK until the end of 2020, after which vehicles registered for use in Great Britain became subject to domestic fleet-wide CO₂ emissions targets. UK Department of Transport. *Green Paper on a New Road Vehicle CO₂ Emissions Regulatory Framework for the United Kingdom*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1007466/green-paper-on-a-new-road-vehicle-co2-emissions-regulatory-framework-for-the-united-kingdom-web-version.pdf (2021); Covid stalls 2021 UK new car market but record EV sales show future direction. *SMMT*.

<https://www.smmt.co.uk/2022/01/covid-stalls-2021-uk-new-car-market-but-record-ev-sales-show-future-direction/> (2022).

³¹ International Council on Clean Transportation. *European Vehicle Market Statistics: Pocketbook 2021/2022*.

http://eupocketbook.org/wp-content/uploads/2021/12/Pocketbook_2021_Web.pdf (2021).

³² International Council on Clean Transportation. *European Passenger Car Registrations: January-November 2020*.

https://theicct.org/wp-content/uploads/2021/06/MarketMonitor-EU-dec2020_0.pdf (2020).

³³ Ibid.

³⁴ International Council on Clean Transportation. *European Vehicle Market Statistics: Pocketbook 2021/2022*.

http://eupocketbook.org/wp-content/uploads/2021/12/Pocketbook_2021_Web.pdf (2021).

³⁵ International Council on Clean Transportation. *European Passenger Car and Light Commercial Vehicle Registrations: January-June 2021*. <https://theicct.org/wp-content/uploads/2021/12/MarketMonitor-EU-jul2021.pdf> (2021).

³⁶ Ibid.

³⁷ Rybczynska, A. Global EV Sales on Track to Hit Record 6.3 Million in 2021: BNEF. *Bloomberg*.

<https://www.bloomberg.com/press-releases/2021-12-15/global-ev-sales-on-track-to-hit-record-6-3-million-in-2021-bnef> (2021).

³⁸ International Council on Clean Transportation. *European Passenger Car and Light Commercial Vehicle Registrations: January-September 2021*.

<https://theicct.org/wp-content/uploads/2021/12/Market-Monitor-Nov-EN-Fact-Sheet-A4-v2-nov21.pdf> (2021).

³⁹ Ibid.

⁴⁰ For instance, in his statement concerning the deal General Motors Canada struck with Unifor in 2020, GM Canada President Scott Bell stated, "Pickups are GM's largest and most important market segment in Canada and across the continent. They also help GM fund our transition to the electric, autonomous and highly connected future we see ahead." A Statement from GM Canada President Scott Bell on Unifor Negotiations. *General Motors Canada*.

https://media.gm.ca/media/ca/en/gm/home.detail.html/content/Pages/news/ca/en/2020/Nov/1105_Negotiations.html (2020).

⁴¹ A Strong Link Between Advertising and Large Vehicle Sales Shown in a New Study by Équiterre. *Équiterre*.

<https://www.equiterre.org/en/communique/a-strong-link-between-advertising-and-large-vehicle-sales-shown-in-a-new-study-by-equiterre> (2021).

Regulating only 2030 and 2035 targets would also erode the main benefit of a ZEV standard over vehicle emission regulations, which is regulatory certainty, making it harder on the various players trying to plan for the ZEV transition: ZEV charging station providers, electric utility companies, municipalities, building developers, and raw material suppliers, among others. **Charging infrastructure and grid readiness will be best served by the regulatory certainty a ZEV standard provides.**

Finally, without a proper federal ZEV standard with ambitious near-term requirements, Canada will make no progress on ensuring ZEV supply is more equitably distributed across the country. In contrast, a faster ramp up in the earlier years of the policy will stimulate investment and force automakers to spread ZEV supply out beyond the provinces of B.C. and Quebec to meet requirements.

We acknowledge that the Minister of Environment and Climate Change is working on an ambitious timeline to get a national ZEV standard in place. Updating and including interim requirements starting in 2025 is vital to achieving our policy objectives. It's critical that Canada prioritize both effective policy design and speedy implementation.

Align with the other North American ZEV standards in place

B.C., Quebec, and California all have zero-emission vehicle standards in place, and their policies are working: all three jurisdictions have significantly higher ZEV market shares than the national average and account for outsized portions of national ZEV sales. See Table 2 below.

Table 2: EV sales and market share in North American ZEV standard jurisdictions

Jurisdiction	Market share (compared to national average)	Share of national sales
California	11.5% ⁴² (4% ⁴³)	42% ⁴⁴
Quebec	8.6% (4.8%)	45% ⁴⁵
British Columbia	10.8% (4.8%)	29% ⁴⁶

⁴² New ZEV Sales in California. *State of California Energy Commission*.

https://tableau.cnra.ca.gov/t/CNRA_CEC/views/DMVDataPortal_15986380698710/SALES_Dashboard?%3AshowAppBanner=false&%3Adisplay_count=n&%3AshowVizHome=n&%3Aorigin=viz_share_link&%3AisGuestRedirectFromVizportal=y&%3Aembed=y (2021).

⁴³ January 12, 2022 Newsletter. *EVAdoption*.

[https://mailchi.mp/d43b781d30da/2021-us-ev-sales-increase-100-rav4-prime-mustang-mach-e-are-the-top-selling-non-tesla-evs?e=\[UNIQID\]](https://mailchi.mp/d43b781d30da/2021-us-ev-sales-increase-100-rav4-prime-mustang-mach-e-are-the-top-selling-non-tesla-evs?e=[UNIQID]) (2022).

⁴⁴ Electric Vehicle Registrations by State. *U.S. Department of Energy*. <https://afdc.energy.gov/data/10962> (2020).

⁴⁵ New motor vehicle registrations: Quarterly data visualization tool. *Statistics Canada*.

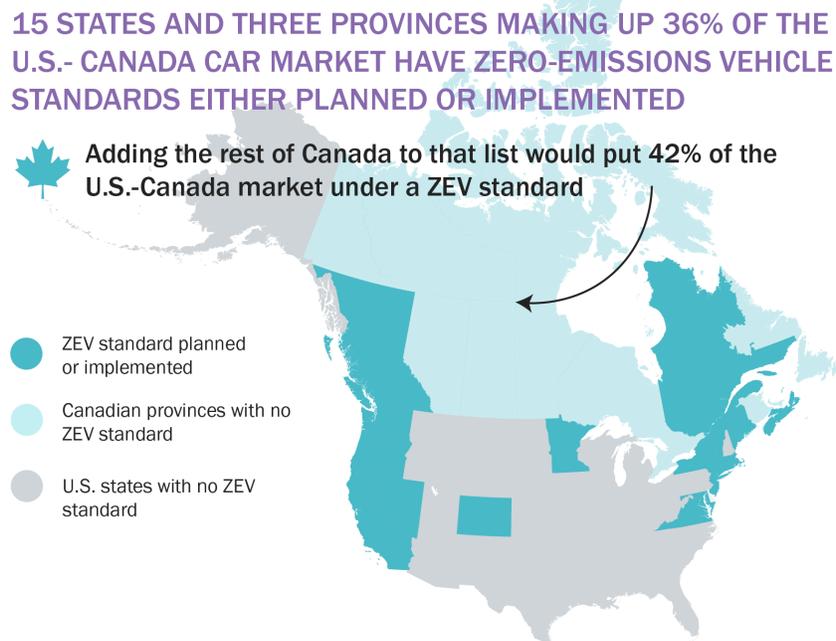
<https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2021019-eng.htm> (2021).

⁴⁶ Ibid.

B.C. and Quebec in particular offer made-in-Canada policies to draw from. Both provinces have years of experience implementing ZEV standards and both are currently working on updated policies that integrate best practices and lessons learned. Canada must learn from and build on these approaches.

A federal ZEV standard must be designed to align with these policies to maximize harmonization within the North American market. Fourteen other states have adopted a zero-emission vehicle standard modeled after California's, which together account for 36% of new U.S. car sales—and this list continues to grow.⁴⁷ Adding the rest of Canada would put 42% of the U.S.-Canada car market under a ZEV standard (see Figure 2 below).

Figure 2. ZEV and non-ZEV provinces and states in Canada and the U.S.



Source: Clean Energy Canada, 2022

Canada has more ambitious ZEV goals than the U.S. and our policy mix should reflect that. With the U.S.-Canada market already bifurcated into ZEV and non-ZEV provinces and states, Canada must align with the group that has ZEV ambitions in line with our own.

Specific design recommendations

A national ZEV standard must include the following design elements:

⁴⁷ These states include [Connecticut](#), [Maine](#), [Maryland](#), [Massachusetts](#), [New York](#), [New Jersey](#), [Oregon](#), [Rhode Island](#), [Vermont](#), [Colorado](#), [Washington](#), [Virginia](#), [Minnesota](#) and [Nevada](#). The 40% calculation is based on data from the U.S. Bureau of Transportation Statistics and the National Automobile Dealers Association.

- **Annual ZEV sales requirements:** The national ZEV standard must require that automakers sell an escalating annual percentage of new light-duty ZEVs on a trajectory that achieves Canada’s mandatory target of 100% new zero-emission passenger vehicle sales by 2035.
 - **2025 target:** The U.S.-Canada vehicle emission standards alone are expected to deliver 14% ZEV sales in the U.S. by 2025.⁴⁸ Canada’s 2025 sales requirement must be updated to reflect this, aiming for at least 20% ZEV sales in that model year.
 - **2026 and 2030 targets:** Starting in model year 2026, Canada must align with the ZEV sales trajectories being proposed by other North American jurisdictions on a path to 100% ZEV sales by model year 2035. The following table sets out recommended credit percentage requirements by vehicle model year for 2026 and 2030 based on the phase 2 ZEV regulations being developed by these jurisdictions.

ZEV Sales Requirements	California ⁴⁹	Quebec ⁵⁰	British Columbia ⁵¹	Proposed for Canada
MY 2026	26%	17.5%	26%	25%
MY 2030	61%	65%	90%	65% ⁵²
MY 2035	100%	100%	100%	100%

- **Types of ZEVs eligible to earn credits:** The types of ZEVs eligible for credits must include battery electric, plug-in hybrid electric (that meet minimum requirements) and hydrogen fuel cell vehicles. Neither conventional hybrid vehicles nor used ZEVs should be eligible for credits.⁵³
- **Credit allocations:** Best practice for ZEV standard design is now allocating one credit per zero-emission vehicle sold. For instance, starting in 2026, B.C.’s ZEV standard will allocate only

⁴⁸ The EPA’s Regulatory Impact Analysis indicates that the final standards are expected to deliver 10% ZEV sales by 2023, 12% by 2024, 16% by 2025, and 17% by 2026. U.S. Environmental Protection Agency. *Revised 2023 and Later Model Year Light-Duty Vehicle GHG Emissions Standards: Regulatory Impact Analysis*. <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P1013ORN.pdf> (2021).

⁴⁹ California Code of Regulations, Section 1962.4 Zero-Emission Vehicle Standards for 2026 and Subsequent Model Year Passenger Cars and Light-Duty Trucks (Draft). <https://ww2.arb.ca.gov/sites/default/files/2021-12/draft%20zero%20emission%20vehicle%20regulation%201962.4%20posted.pdf> (2021).

⁵⁰ See the Government of Quebec’s “Modification of the ZEV standard”, Consultation on the calculation assumptions for the regulatory impact analysis: Preliminary results, September 21, 2021. (Unpublished)

⁵¹ Government of B.C. *CleanBC Roadmap to 2030*. https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf (2021).

⁵² The C.D. Howe Institute recently concluded that Canada must reach 70-75% ZEV passenger vehicle sales to meet its 2030 climate targets, and this was before the federal government committed to enhanced climate targets. Balyk, J., Livingston, B., Hastings-Simon, S. & Bishop, G. *Driving Ambitions: The Implications of Decarbonizing the Transportation Sector by 2030*. <https://www.cdhowe.org/media-release/zero-emission-vehicle-sales-must-reach-70-percent-2030-hit-federal-emissions-targets> (2021).

⁵³ One of the best ways to grow the used ZEV market is by accelerating new ZEV sales. A ZEV standard focused on new ZEV sales should be complemented by a modified iZEV program that supports used ZEV sales.

one credit per vehicle sold and Quebec’s draft ZEV regulation proposes to do the same—despite both policies previously offering multiple credits for certain vehicles such as long-range battery electric vehicles. This approach reduces complexity, prevents an oversupply of credits, maximizes emission reductions and provides the greatest certainty of achieving ZEV sales targets.⁵⁴

- **Treatment of plug-in hybrid EVs:** Canada’s ZEV standard should grant full credit to PHEVs so long as they meet a minimum all-electric range requirement of 80km (in line with Quebec and California’s proposed cut-offs). While the International Council on Clean Transportation recently found that PHEV fuel consumption and tail-pipe CO₂ emissions in real-world driving are about two to four times higher than advertised, PHEVs have been shown to play an important role in helping lower-income families make the decision to go electric.⁵⁵ Rewarding full credit for PHEVs will also help gain political support for this policy, as the continued production of PHEVs in North America over the next decade is expected to ease the transition for autoworkers.⁵⁶ Finally, the inclusion of PHEVs in a ZEV standard is likely to increase automaker compliance and improve the chances of meeting ZEV sales targets.⁵⁷ Attaching criteria for minimum all-electric range can address the discrepancy in rated versus real-world driving scenarios, and ensure the policy achieves its emission reduction goals.⁵⁸
- **Bonus partial credits for efforts to increase sales in Northern and remote communities:** In addition to rewarding full credit to eligible PHEVs, another design feature that could be used to ensure ZEV uptake in Northern and remote communities is to award bonus partial credits for OEM efforts that increase ZEV sales in these communities. These partial credits would be awarded in addition to the base credits received for the ZEV sale. They could be modeled after California’s Environmental Justice allowances, which can be earned by automakers who take action to increase access to ZEVs in priority communities (under California’s system, “priority” is based on income level). Limits must be placed on the use of these credits. For instance,

⁵⁴ For instance, the START’s simulation study demonstrates that a one-credit-per-ZEV sold approach would lead to actual ZEV sales that align with the Canadian 2030 sales target (which was 30% by 2030 at the time of the simulation), whereas a California-like system would lead to fewer sales than targeted due to the assignment of multiple credits per vehicle. See Chandan, B., Axsen, J. & McCollum, D. How to design a zero-emissions vehicle mandate? Simulating impacts on sales, GHG emissions and cost-effectiveness using the AUTomaker-Consumer model (AUM). *Transport Policy*. <https://www.sciencedirect.com/science/article/pii/S0967070X21003656> (2021).

⁵⁵ International Council on Clean Transportation. Real-World Usage of Plug-in Hybrid Electric Vehicles: Fuel Consumption, Electric Driving, and CO₂ Emissions. <https://theicct.org/publication/real-world-usage-of-plug-in-hybrid-electric-vehicles-fuel-consumption-electric-driving-and-co2-emissions/> (2020); Advanced Clean Cars (ACC) II Workshop. *California Air Resources Board*. https://ww2.arb.ca.gov/sites/default/files/2021-05/acc2_workshop_slides_may062021_ac.pdf (2021).

⁵⁶ Economic Policy Institute. *The Stakes for Workers in How Policymakers Manage the Coming Shift to All-Electric Vehicles*. <https://www.epi.org/publication/ev-policy-workers/> (2021).

⁵⁷ Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in written submission made by Équiterre and the David Suzuki Foundation).

⁵⁸ Canada could consider phasing out PHEVs as vehicles eligible for credit in later years, as countries like the UK are proposing. Government of the UK. *Net Zero Strategy: Build Back Greener*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf (2021).

California's Environmental Justice allowances can be used to meet up to 5% of an automaker's compliance obligation for a limited number of years. Eligible communities must be clearly and narrowly defined. Finally, measures to ensure integrity and avoid "gaming" may also be needed, such as by granting one full credit at the time of the sale and granting the bonus partial credit only if the vehicle remains registered in an eligible community two years later.

- **Early action credits:** We do not support any early action credits for ZEV sales prior to the regulations coming into effect.
- **Penalties:** Penalties for non-compliance must be set at a minimum of \$10,000 to \$20,000 per ZEV credit deficit to achieve policy objectives and incentivize automakers to adopt a marketing strategy that accelerates growth in ZEV sales.⁵⁹ Quebec's draft regulation proposes an increase in penalties from \$5,000 to \$20,000 for phase 2 of its ZEV standard. Proceeds collected must be reinvested back into programs that encourage and enable ZEV uptake, with a focus on charging infrastructure and purchase incentives.
- **Timing:** Finalize the regulation by 2023 and implement it to begin taking effect with model year 2024. This timeline coincides with Canada's commitment to align with the most ambitious clean car standards in the U.S. post-2025.⁶⁰ Use the Emission Reduction Plan to signal a trajectory of ZEV standard requirements for 2025-2030 and provide sufficient lead time for automakers to plan.
- **Interaction with provincial ZEV standards:** Treat the federal ZEV standard as a "backstop" in that a national ZEV standard would only be applied where provinces do not have equal or more stringent mandatory ZEV standards in place. This approach would ensure ZEV supply is more fairly distributed across the country. It would attract support from B.C. and Quebec, allowing them to continue to set higher bars for ambition. It would also help smaller, resource-constrained provinces and territories who are themselves exploring a ZEV standard but are concerned about the technical expertise and resources needed to set up a credit market. Provincial equivalency agreements will likely be required.
- **Regular review:** Given how quickly the global ZEV landscape is changing and how often projections underestimate actual levels of ZEV uptake, the federal government must commit to review the federal ZEV standard on a bi-annual basis. Regular reviews will ensure targets are still appropriate in light of updated price parity projections and "business as usual" scenarios.

⁵⁹ Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation); Jaccard, M. Rev up zero-emission vehicle mandates. *The Free Press*. <https://freepress.com/opinion/columnists/jaccard-rev-up-zero-emission-vehicle-mandates> (2021).

⁶⁰ Environment and Climate Change Canada. *A Healthy Environment and A Healthy Economy*. <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/healthy-environmentthehealthy-economy.html> (2020).

Impacts of a ZEV standard on automakers

Automakers claim that complying with a ZEV standard starting in 2025 is too ambitious. But the sector has shown time and again its remarkable ability to pivot in response to regulatory developments and market demands.

For instance, we saw General Motors hire a German parts supplier to build its EV600 delivery vans while the company worked to convert its CAMI Assembly in Ontario to keep up with demand and remain on schedule to deliver the EV600 vans to its initial customer, FedEx.⁶¹ Similarly, Ford Motors has already announced it would double its production capacity of the F-150 Lightning twice since it unveiled the vehicle in May 2021 in response to skyrocketing demand.⁶²

OEMs were similarly concerned about Quebec and B.C.'s ZEV standard, both of which were put in place quickly, and OEMs have complied with those policies successfully.⁶³ Moreover, other jurisdictions are developing and implementing ZEV standards along similarly ambitious timelines. For instance, the U.K. announced in October 2021 that it was moving forward with a national ZEV standard to be implemented by 2024.⁶⁴

Automakers' future compliance will also be supported by the ambitious targets they're setting for themselves and the significant percentage of capital expenditures they are putting toward electrification over the next five years.⁶⁵ See Figure 3 below for automaker internal combustion engine phase out commitments.

⁶¹ LaReau, J. GM Confirms Hiring Supplier to Build First Electric Vans for BrightDrop. *Detroit Free Press*. <https://www.freep.com/story/money/cars/general-motors/2021/07/13/gm-confirms-hiring-supplier-build-first-electric-vans-brightdrop/7951140002/> (2021).

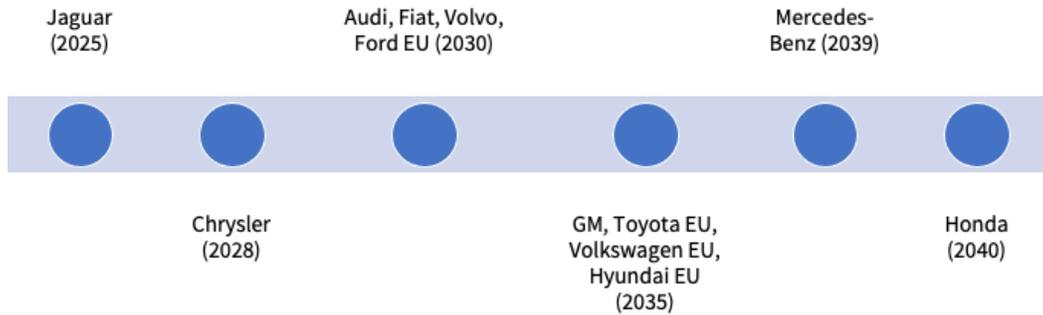
⁶² Klayman, B. & White, J. Ford Doubles Lightning Production Target on Strong Pre-Launch Demand. *Reuters*. <https://www.reuters.com/business/autos-transportation/exclusive-ford-doubles-lightning-production-target-strong-pre-launch-demand-2021-08-23/> (2021); Full Speed Ahead: Ford Planning to Nearly Double All-Electric F-150 Lightning Production to 150,000 Units Annually; First Wave of Reservation Holders Invited to Order. *Ford Motor Company*. <https://media.ford.com/content/fordmedia/fna/us/en/news/2022/01/04/ford-planning-to-nearly-double-all-electric-f-150-lightning-production-150000-units.html> (2022).

⁶³ Government of Québec. *Act to Increase the Number of Zero-Emission Motor Vehicles in Québec in Order to Reduce Greenhouse Gas and Other Pollutant Emissions: 2018-2020 Implementation Report*. <https://www.environnement.gouv.qc.ca/changementsclimatiques/vze/rapport-mise-oeuvre-2018-2020-en.pdf> (2021); Yakub, M. New British Columbia 2030 Climate Plan Has Most Aggressive Interim ZEV Sales Targets in North America. *Electric Autonomy*. <https://electricautonomy.ca/2021/10/28/british-columbia-zev-sales-targets/> (2021).

⁶⁴ Government of the U.K. *Net Zero Strategy: Build Back Greener*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf (2021).

⁶⁵ BloombergNEF. *Zero-Emission Vehicles Factbook: A BloombergNEF special report prepared for COP26*. https://assets.bbhub.io/professional/sites/24/BNEF-Zero-Emission-Vehicles-Factbook_FINAL.pdf (2021); Klayman, B. Stellantis' Chrysler Brand to Go All Electric by 2028. *Reuters*. <https://www.reuters.com/technology/stellantis-chrysler-brand-go-all-electric-by-2028-executive-2022-01-05/> (2022); Ford Europe Goes All-In on EVs on Road to Sustainable Profitability; Cologne Site Begins \$1 Billion Transformation. *Ford Motor Company*. <https://media.ford.com/content/fordmedia/feu/en/news/2021/02/17/ford-europe-goes-all-in-on-evs-on-road-to-sustainable-profitabil.html> (2021).

Figure 3. Automaker ICE phase-out commitments



Source: Clean Energy Canada, 2022

Recent modeling by Jonn Axsen and SFU START found that implementing a national ZEV standard would reduce automaker profits for 2020-2035 by 6.8% compared to what they would've made absent the policy.⁶⁶ Over this time, automaker profits would still rise.⁶⁷ In contrast, an approach that relies on vehicle emission standards to achieve our ZEV sales targets would reduce automaker profits by 7.6%.⁶⁸

Negative profit impacts will decrease as ZEVs become cost-competitive to make and buy without subsidies.⁶⁹ The U.S. will pass this tipping point for all passenger vehicle segments by 2023 or 2024—the earliest of any major market and before the first ZEV standard requirements would kick in.⁷⁰

Policies to complement a national ZEV standard

A national ZEV standard must be part of a broader clean cars policy package that addresses both supply and demand barriers to ZEV uptake, while also ensuring Canada's auto sector captures the economic benefits of the domestic and global shift to ZEVs. Top priority measures to be pursued in addition to a national ZEV standard include:

1. **Consumer incentives:** Refund the iZEV with \$1.5 billion and extend the program until at least 2024, when ZEVs are expected to reach price parity. Make SUVs, pickup trucks and used

⁶⁶ "Profit losses result from the automaker having to change their practices (pricing, R&D investment and other strategies) relative to the baseline, as well as fewer sales and lower profit margin for the initial years and additional production and scaling costs in the initial years." Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation).

⁶⁷ Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation). This finding was also confirmed via email exchange with author reports.

⁶⁸ Ibid.

⁶⁹ BloombergNEF. *Zero-emission vehicles factbook: A BloombergNEF special report prepared for COP26*. https://assets.bbhub.io/professional/sites/24/BNEF-Zero-Emission-Vehicles-Factbook_FINAL.pdf (2021).

⁷⁰ We assume price parity projections would be similar for Canada.

vehicles eligible for the program to accommodate the majority of Canadians' buying preferences.⁷¹

2. **Charging infrastructure:**

- a. Conduct modeling to better understand Canada's precise charging needs in line with our ZEV sales targets and target public investments most effectively.
 - b. Re-fund the Zero-Emission Vehicle Infrastructure and Electric Vehicle and Alternative Fuel Infrastructure Deployment programs with \$700 million over 5 years, and continue relying on third party administrators to accelerate deployment.
 - c. Install ZEV charging stations in all government parking lots.
 - d. Include ZEV-readiness requirements in the National Model Building Code.
 - e. Allocate \$1 billion over five years to a new ZEV Ready Incentive Program that supports upgrades to existing multifamily buildings, workplaces and fleet facilities.
 - f. Expand the greener homes grant to include electrical panel upgrades and ZEV charging stations.
3. **Vehicle emission standards:** Limit compliance flexibilities when aligning with pre-2025 U.S.-Canada vehicle emission standards, including by eliminating ZEV multiplier credits.
4. **National battery strategy:** Develop a national battery strategy in coordination with industry that focuses efforts and guides policies and investments geared towards the build out of Canada's EV and battery supply chain.

Each of these categories of measures deserve their own separate consultations and must involve relevant stakeholders, many of whom are not being adequately engaged in this consultation process (e.g. electric utility companies, building developers, mining companies, battery cell and other component manufacturers, recycling companies, etc).

Additional comments on questions

ECCC's discussion document invites comments on a broad range of topics related to ZEV uptake in Canada and the global EV supply chain. This submission has focused on the **topic most directly relevant to meeting Canada's ZEV and GHG emission reduction goals—establishing a ZEV standard**. The other measures explored in the discussion document are insufficient to meet Canada's goals and detract from the primary policy objectives. None of them will play as powerful a role as regulating the sale of zero-emission vehicles through a well-designed ZEV standard.

Feebate and vehicle excise tax

The federal government could consider a feebate, which charges a fee for the purchase of higher-emitting vehicles and provides subsidies for low-emissions vehicles and ZEVs, or expanding the

⁷¹ New Motor Vehicle Registrations Data Visualization Tool. *Statistics Canada*. <https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2019028-eng.htm> (2020); Nowak, P. First-Time Buyers Boosting Car Sales as Coronavirus Changes the Mobility Landscape. *The Globe and Mail*. <https://www.theglobeandmail.com/drive/mobility/article-first-time-buyers-boosting-car-sales-as-coronavirus-changes-the/> (2020).

vehicle excise tax to include a broader range of high-emitting vehicles. However, neither one of these policy approaches will be as effective as a ZEV standard.

While feebate schemes have been used in a few countries over the past decade, they typically have not been implemented with high enough fees or subsidies to substantially move the vehicle fleet toward more ambitious decarbonization goals.⁷²

Second, modeling by Dr. Jonn Axsen and SFU START which compared various policy pathways in Canada found that a **feebate approach was the least cost-effective policy approach (in terms of costs to industry and consumers) and offered the greatest uncertainty of outcomes (i.e. GHG emission reductions and Canada's ability to meet its ZEV sales targets)**.⁷³ A further concern is that being able to ensure a feebate policy is stringent and durable enough to achieve the desired policy outcomes is questionable and relies on elements outside of government's control such as election cycles.

The main benefit of a feebate is that it provides a sustainable revenue source for the continued subsidization of ZEV sales. In other words, it would provide a source of government revenues that could be used to recapitalize the iZEV program over time. However, a ZEV standard could achieve a similar result. Rather than the federal government being responsible for funding and administering ZEV purchase incentives for the long-term, a well-designed ZEV standard incentivize automakers to engage in their own cross-subsidization, raising the cost of their higher-polluting, higher-margin vehicles to subsidize the sale of ZEVs.⁷⁴

Battery supply chain

Rather than seeking to build an advanced battery industry and supply chain in Canada while demand for lithium-ion batteries is still centered off-shore, **Canada must also support the growth of a robust domestic ZEV market and ensure there is sufficient demand for batteries here.**

Canada's existing federal rebate program to make passenger ZEVs more affordable for Canadians and efforts to-date to build out a public charging network are a good start. But **these alone will not provide the long-term policy signals and market certainty that companies along the ZEV supply chain need.** Globally, the countries leading on zero-emission vehicle production and attracting global ZEV investment are regulating the transition to ZEVs through a ZEV standard, a ban on the sale of conventional vehicles, and/or stringent vehicle emission standards.⁷⁵ These include China, Germany, the U.S. (at the state level), Japan, South Korea, and France.

⁷² Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation).

⁷³ Axsen, J. & Bhardwaj, C. *Analysis and Research on Policy Pathways to 100% Zero-Emission Vehicles by 2035 in Canada*. (2022). (Included in a written submission made by Équiterre and the David Suzuki Foundation).

⁷⁴ Ibid.

⁷⁵ Clean Energy Canada. *Taking the Wheel*. <https://cleanenergycanada.org/report/taking-the-wheel/> (2020); Lienert, P. & Chan, C. A Reuters analysis of 29 global automakers found that they are investing at least \$300 billion in electric vehicles, with more than 45 percent of that earmarked for China. *Reuters*. <https://graphics.reuters.com/AUTOS-INVESTMENT-ELECTRIC/010081ZB3HD/index.html> (2019).

A national zero-emission vehicle standard will grow Canada's domestic ZEV market, create assurances that demand for critical minerals and batteries will exist, and drive longer-term investments in ZEVs and their input materials and parts. This policy must be complemented by a national battery strategy, as recommended above.

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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