

Zero-Emission Vehicle Sales regulation

Expectations for Canada's Plan to Phase
Out the Sale of New Gasoline Cars by 2035

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Équiterre^o



environmental
defence

Policy Context Summary

Environment and Climate Change Minister, Steven Guilbeault, is expected to soon announce the federal government's final regulation for phasing out the sale of new gasoline cars by 2035. This policy was signaled as part of the 2021 Liberal election platform and part of the federal government's 2030 emissions reduction plan. Canada is also among the signatories to the COP26 declaration on zero emissions cars and vans, which commits advanced economies to phasing out the sale of new gasoline light-duty vehicles by 2035.¹ Following extensive stakeholder consultations, Canada posted draft regulations for implementing this policy (*Zero-Emission Vehicle Sales Regulation*) in December 2022.²

Environmental Defence Canada and Equiterre are looking for the final regulations to have stronger ZEV sales targets in line with reference jurisdictions, the tightening of current provisions that allow for excess compliance deferral, the elimination of the 'ZEV-related activities' loophole, and halting the potential introduction of new clauses that would weaken the regulation, such as 'early action credits,' 'super credits,' or giving Plug-In-Hybrid Vehicles (PHEVs) excess credits.

How does it work?

Given that new light-duty vehicles (passenger cars and trucks) last typically 15 years on the road (and in some cases even longer), it is essential to phase out the sale of gasoline powered vehicles by at the latest 2035 to achieve net zero carbon emissions by 2050.

This policy achieves this in a similar manner to tailpipe emissions standards for new vehicles, where a target is set for automaker's fleets, and enforced with a credit system. Like vehicle emissions standards, this ZEV regulation applies to automakers, not consumers. But unlike tailpipe emissions rules, which require automakers to meet a specific corporate fleet average, this regulation goes a step further and sets a target that specifies what percentage of all light-duty vehicles available for sale must be fully zero-emission each year.

The federal government plans to gradually increase this Zero Emission Vehicle (ZEV) sales target each year until it reaches 100 per cent in 2035, effectively phasing out the sale of new gasoline cars and trucks. To comply with the policy, automakers would earn credits for selling ZEVs, buy credits from over-compliant automakers, or be penalized.

Where else do policies like this exist?

A ZEV-specific regulation is already present in California and 15 other US states which follow the California rule (known as Section 177 states, or 'ZEV states') which have a waiver from the US Federal Government that permits them to set stronger pollution standards for vehicles in their jurisdictions. Quebec and British Columbia have already followed the lead of California and adopted their own ZEV regulations.

As part of the 'fit for 55' package, the European Union will phase out the sale of new gasoline cars by 2035 through aggressively ramping up vehicle emissions standards (VES).³ The United Kingdom is also in the process of implementing their own ZEV sales regulation.⁴ China has a dual-credit system with enforced targets for both 'new energy vehicle' sales and tailpipe emissions, and South Korea has introduced a ZEV regulation, though both only have near-term targets.

¹ COP26 declaration: zero emission cars and vans

<https://www.gov.uk/government/publications/cop26-declaration-zero-emission-cars-and-vans>

² Canada Gazette, Part I, Volume 156, Number 53: Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations

<https://canadagazette.gc.ca/rp-pr/p1/2022/2022-12-31/html/reg1-eng.html>

³ Reuters (2022) EU approves effective ban on new fossil fuel cars from 2035

<https://www.reuters.com/markets/europe/eu-approves-effective-ban-new-fossil-fuel-cars-2035-2022-10-27/>

⁴ A zero emission vehicle (ZEV) mandate and CO2 emissions regulation for new cars and vans in the UK

<https://www.gov.uk/government/consultations/a-zero-emission-vehicle-zev-mandate-and-co2-emissions-regulation-for-new-cars-and-vans-in-the-uk>

What are the Benefits?

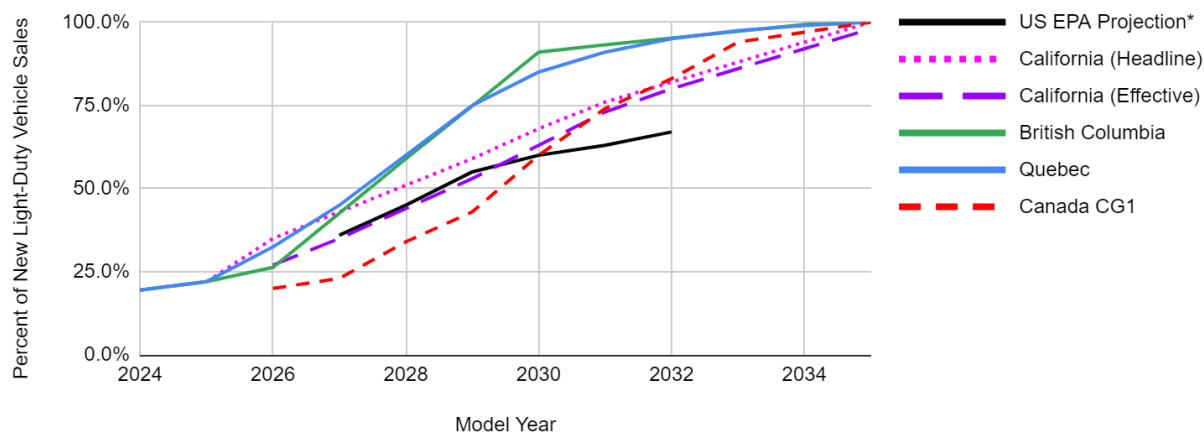
1) An Insurance Policy for Canadian ZEV Adoption Targets

Adopting a ZEV-specific regulation allows Canada to achieve more ambitious climate targets than the United States without disrupting existing regulatory alignment on tailpipe emissions standards with the United States Federal Government. Canada does not have full control over VES regulations, as we adopt by reference the fuel economy rules that are written in Washington by the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA).

Canada has more ambitious goals for ZEV adoption than the United States, targeting 100 per cent of new car sales by 2035, which is aligned with other subnational North American jurisdictions and global partners such as the UK and European Union. This gives Canada an ‘insurance policy’ by allowing Canada to independently meet ZEV adoption targets regardless of the outcome of future US Presidential elections, or potential actions by the US Supreme Court to strike down the EPA’s proposed strengthening of tailpipe emissions standards. This is particularly important given that the Republican controlled Supreme Court is already defanging the EPA’s ability to regulate carbon emissions from power plants.⁵

ZEV Sales Targets - North American Jurisdictions

*US EPA Projection Excludes PHEVs



2) A Direct Rather than Indirect Regulatory Tool

This also allows Canada to use a direct rather than indirect regulatory approach to increasing ZEV adoption, given that the indirect tool - tailpipe emissions standards adopted from the US - have so far failed to achieve meaningful emissions reductions due to loopholes in their design. The ‘footprint’ standard enabling laxer tailpipe standards for larger vehicle sizes and separate, less stringent regulatory category for light trucks (based on vehicle weight) have allowed automakers to avoid reducing emissions by encouraging a shift in the supply of vehicles away from compact sedan cars towards larger and heavier SUVs and pickup trucks.⁶ The International Energy Agency (IEA) estimates that 40 per cent of the fuel economy improvements in the United States from 2010 to 2019 have been effectively canceled out by increased vehicle size and weight associated with this trend.⁷

The share of SUVs and pickup trucks as a percentage of all new car sales in Canada has steadily climbed from 55 per cent in 2010 to 86 per cent this year.⁸ As a result of this, the Canadian passenger vehicle fleet has the worst

⁵ Chung, Andrew (2023) US Supreme Court rulings darken forecast for EPA powers. Reuters.

<https://www.reuters.com/world/us/us-supreme-court-rulings-darken-forecast-epa-powers-2023-05-31/>

⁶ Whitefoot, Kate & Skerlos, Steven. (2011). Design incentives to increase vehicle size created from the U.S. footprint-based fuel economy standards. Energy Policy. 41. 402-411. 10.1016/j.enpol.2011.10.062.

⁷ IEA (2021) Global Fuel Economy Initiative, p.11. <https://www.iea.org/reports/global-fuel-economy-initiative-2021>

⁸ Statistics Canada, Table: 20-10-0002-01. New motor vehicle sales, by type of vehicle.

fuel economy of any major car market in the world.⁹ While GHG emissions from passenger cars have declined by 41 per cent below 2005 levels, GHG emissions from light trucks have gone up 26 per cent above 2005 levels.

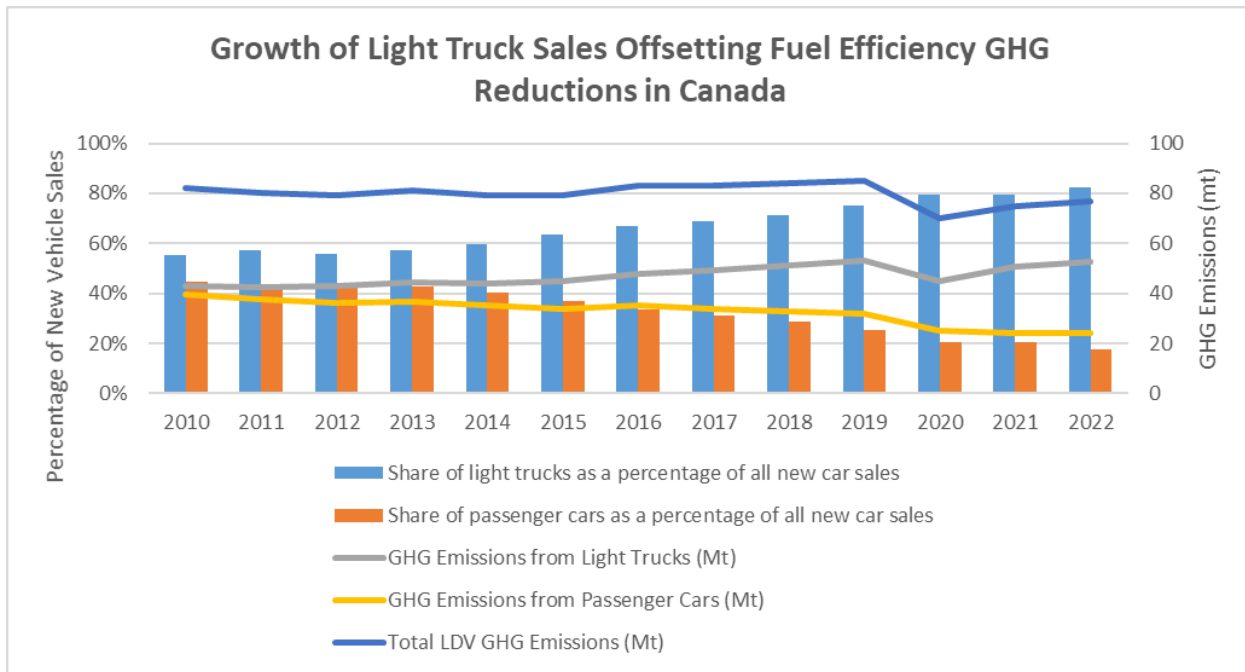


Chart derived from StatCan Table: 20-10-0002-01 and National Inventory Report, GHG Sources and Sinks in Canada and Early Estimate of 2022 emissions from the Canadian Climate Institute

3) Significant Emissions Reductions and Public Health Benefits

The regulatory impact statement of Canada’s draft ZEV regulation estimates the impact of this policy as driving a GHG emission reduction of 430 million tonnes by 2050. To put that in perspective, this is equivalent to 73,000 Olympic size swimming pools full of gasoline - not burned.

This measure will also have significant public health benefits. Analysis by The Atmospheric Fund (TAF) indicates that Canada’s proposed federal ZEV regulation will result in over \$90 billion in health benefits for Canadians over the next 25 years, including up to 11,000 avoided premature deaths.¹⁰

4) Alleviate Supply Shortages by Addressing Production Bias

Canadians are currently facing long wait times and low availability of ZEVs due to a limited supply being manufactured. According to an Abacus Data poll, 70 per cent of Canadians say that long wait times are making them less likely to consider buying an electric vehicle.¹¹ Automakers currently have larger profit margins on gasoline vehicles than they do on zero-emission vehicles. Because of this, automakers have a bias in investment

⁹ Canada Energy Regulator (2019) Market Snapshot: How does Canada rank in terms of vehicle fuel economy? <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-how-does-canada-rank-in-terms-vehicle-fuel-economy.html>

¹⁰ TAF (2023) Canada’s electric vehicle sales targets will reduce air pollution and create at least \$90 billion in health benefits. <https://taf.ca/canadas-electric-vehicle-sales-targets-will-reduce-air-pollution-and-provide-at-least-90-billion-in-health-benefits/>

¹¹ Environmental Defence (2022) Poll: 74 per cent of Canadians believe automakers have a responsibility to shift to zero-emission vehicles, even if it reduces profits. <https://environmentaldefence.ca/2022/09/06/poll-74-per-cent-of-canadians-believe-automakers-have-a-responsibility-to-shift-to-zero-emission-vehicles-even-if-it-reduces-profits/>

and vehicle pricing decisions towards furthering the production and sale of more gasoline vehicles, and a vested interest in keeping ZEVs confined to a niche, luxury market.¹²

The pandemic-related supply crunch of semiconductors has led to automakers rationing these chips towards their most profitable and least fuel-efficient vehicle models (SUVs, trucks) instead of compact, more fuel efficient sedans and ZEVs.¹³ Meanwhile, industry profits have skyrocketed. This shift has been termed by industry analysts as 'Value, not volumes'¹⁴ and described by economists as 'seller's inflation'.¹⁵

As many automakers transitioned their business models from a volume focus to a margin focus, 74 per cent of the production cuts which occurred happened in the most affordable segments of the market - compact, more fuel-efficient cars.¹⁶ Long wait lists for zero-emission vehicles also grew as automakers prioritized production of more profitable SUVs and trucks instead. One study by Dunskey Energy + Climate Advisors conducted for Transport Canada found that in March 2022, 82 percent of dealerships across Canada did not have any ZEVs in stock.¹⁷ Of the remaining 18 percent of dealerships with ZEVs, half of them only had a single vehicle in their inventory. Of those dealers without any ZEVs available, 38 percent of them said the wait time for a new order would be over 6 months.

But jurisdictions with ZEV regulations in place (BC and Québec), have a disproportionate percentage of ZEV sales because automakers send their currently limited supply of ZEVs to jurisdictions where requirements regarding ZEV supply are the most stringent. A national ZEV regulation would mitigate regional inequities and increase ZEV availability across the country.¹⁸ Considering that California and 15 other US states already have ZEV sales requirements in place, it will also raise the share of US-Canada auto market covered by this regulation from 36 per cent to 43 per cent - prompting automakers to significantly scale production and overall ZEV supply.¹⁹

5) Drive Down ZEV Prices

It is important to understand how automakers change their behavior in response to a ZEV regulation. In effect, their inflationary 'price over volume' strategy stops working. Car companies won't be able to base their business plans around shifting their product mix towards selling high-polluting, expensive cars anymore.²⁰ That's because they'll have to comply with meeting climate targets instead of only considering what's best for their bottom lines.

Automakers engage in cross-subsidization of their vehicle fleet available for sale by charging different mark-ups across their product mix. Introducing a ZEV regulation would effectively require them to respond by taking the profits they make from selling gasoline cars to lower the price of ZEVs in order to meet sales requirements. In this

¹² Environmental Defence (2022) Profiting from Pollution: How the Auto Industry is Fighting Against Clean Car Regulations. <https://environmentaldefence.ca/report/profitting-from-pollution/>

¹³ Environmental Defence (2023) Explainer: Why Are EVs So Expensive? <https://environmentaldefence.ca/2023/06/20/explainer-why-are-evs-so-expensive/>

¹⁴ Bloomberg (2022) The Car Industry Is Facing a Big Affordability Crisis. <https://www.bloomberg.com/opinion/articles/2022-10-10/citroen-dacia-and-china-are-king-in-autos-inflation-crisis>

¹⁵ Weber, Isabella M. and Wasner, Evan, "Sellers' Inflation, Profits and Conflict: Why can Large Firms Hike Prices in an Emergency?" (2023). Economics Department Working Paper Series. 343. Retrieved from https://scholarworks.umass.edu/econ_workingpaper/343

¹⁶ Cox Automotive (2023) Why Are Prices So High? The Used-Car Factory Was Shut Down. Market Insights. <https://www.coxautoinc.com/market-insights/why-are-prices-so-high-the-used-car-factory-was-shut-down/>

¹⁷ Dunskey (2023) Zero Emission Vehicle Availability Report: Estimating Inventories in Canada: 2022 Update. <https://www.dunskey.com/wp-content/uploads/2023/01/Zero-Emission-Vehicle-Availability-2022-Update.pdf>

¹⁸ Anna Kanduth. Why is it so hard to get an electric vehicle in Canada? Canadian Climate Institute. <https://440megatonnes.ca/insight/why-is-it-so-hard-to-get-an-electric-vehicle-in-canada/>

¹⁹ Clean Energy Canada and Electric Mobility Canada, [How Canada can design a truly effective zero-emission vehicle mandate](https://www.cleanenergy.ca/how-canada-can-design-a-truly-effective-zero-emission-vehicle-mandate).

²⁰ Reuters (2023) Analysis-GM could reap billions by building combustion trucks and SUVs through 2035. <https://www.saltwire.com/cape-breton/business/analysis-gm-could-reap-billions-by-building-combustion-trucks-and-suvs-through-2035-100863528/>

situation, the only way for a car company to expand their profit margins is to invest in cutting production costs and to take market share from their competitors by supplying a more attractive ZEV product to consumers at a better price. This is exactly what is predicted by economic modeling done by the Sustainable Transportation Action Research Team (START) at Simon Fraser University.²¹ This modeling found that enforcing EV sales targets in Canada with supply regulation would make automakers more than double research and development (R&D) investments in cutting costs and bring more affordable EV models to market. This, including cross-subsidization of their vehicle fleet results in prices for the median EV falling by more than 20 per cent below the existing business-as-usual trajectory.

Increasing overall ZEV supply is also very important because most low and middle income households do not purchase vehicles (ICE or ZEV) brand new, but rather they do their shopping in the used vehicle market. Increasing new ZEV supply will increase the turnover and availability of ZEVs going into the used vehicle market at lower prices and make ZEVs more accessible to low and middle income families.

6) Create Market Certainty for Charging Infrastructure Investment

Canadians want the certainty that when they buy an electric vehicle they can get a charge when they need one. A recent NRCan study found that based on Canada's EV sales targets, we are already on track to meet our charging needs by 2025 - but more needs to be done to ensure our charging needs are met by 2030.²² The total cost for our charging needs by 2050 will be about \$20 billion. This cost can be shared between the public and private sector and more can be done to spur investment in the Canadian EV charging network.

The market certainty provided by a ZEV sales regulation will help drive private investment in charging infrastructure. This helps solve one key problem – the case where there aren't enough EVs on the road for a business to justify investing in lots of charging infrastructure, because it will sit unused, and the business (or public utility) will lose money.²³ A higher projected EV to charger ratio will help make the business case for more investment.²⁴ Following regulatory pressure, the auto industry has recently announced a joint venture²⁵ where manufacturers will partner together to invest in charging infrastructure across North America, similar to Tesla, and deals have been struck to allow car companies such as Ford and General Motors to share Tesla's supercharger network.²⁶

However, this regulation will not be a panacea, and additional public investments in supporting EV charging are needed. In particular, many organizations are calling on the federal government to allocate additional funding in the next federal budget to retrofit condo and apartment buildings for EV charging.²⁷

Issues in Canada's Draft Proposal

²¹ Axsen, Jonn & Bhardwaj, Chandan (2022) Modeling a Zero-Emission Vehicle Standard and Subsidies in Canada's Light-Duty Vehicle Sector (2023-2035). Prepared for Environmental Defence and Équiterre by the Sustainable Transportation Action Research Team (START), Simon Fraser University.

https://environmentaldefence.ca/wp-content/uploads/2022/11/Clean_Car_Standard_Technical_Report_FINAL-ENG-.pdf

²² NRCan (2022) Updated Projections of Canada's Public Charging Infrastructure Needs.

<https://natural-resources.canada.ca/energy-efficiency/transportation-alternative-fuels/resource-library/updated-projections-canadas-public-charging-infrastructure-needs/24504>

²³ Bloomberg (2023) China's Unloved EV Chargers Point to Challenges for Public Plugs.

<https://www.bloomberg.com/news/articles/2023-04-03/china-s-unloved-ev-chargers-point-to-challenges-for-public-plugs>

²⁴ Bloomberg (2022) Electric Vehicle Growth Outpaces Installation of Battery Chargers.

<https://www.bloomberg.com/news/articles/2022-04-12/electric-vehicle-growth-outpaces-battery-charger-installations>

²⁵ BusinessWire (2023) Seven Automakers Unite to Create a Leading High-Powered Charging Network Across North America.

<https://www.businesswire.com/news/home/20230725534688/en/Seven-Automakers-Unite-to-Create-a-Leading-High-Powered-Charging-Network-Across-North-America>

²⁶ CNBC (2023) What Tesla charging partnerships with Ford and GM mean for the EV industry. <https://cnb.cx/449L0Er>

²⁷ See: <https://taf.ca/ev-ready-charging/>

1) ZEV Sales Targets Lag Behind Reference Jurisdictions

Canada's proposed ZEV sales targets are the weakest among reference jurisdictions (BC, Quebec, California and US EPA proposed BEV sales projections) in the years preceding 2030. In response to the draft regulation, Environmental Defence, Equiterre, the David Suzuki Foundation, Electric Mobility Canada and Clean Energy Canada all recommended that the federal government raise its proposed ZEV sales targets.^{28,29,30}

2) Three-Year Compliance Deferral

Canada has proposed a rolling three-year rolling compliance deferral regime where automakers are able to carry forward an unlimited amount of credit deficit as credit debt, so long as the deficit of three years prior is paid off by a credit surplus in a future year. This means that automakers could theoretically wait until 2029 before facing any penalties for being in non-compliance.

This is highly different from BC, which only gives automakers a single 'grace year' to settle credit deficits, while not allowing deficits to accumulate as credit debt in subsequent years. It is also different from Quebec, which also has a gradually declining cap on the number of previously accumulated credits that can be used to settle credit deficits.

3) Credit Generation for Activities Unrelated to Selling ZEVs

The draft ZEV regulation includes a 'ZEV-related activities' clause which allows automakers to generate credits for not selling ZEVs. This clause instead allows automakers to earn credits by investing in charging infrastructure, an activity that this regulation should be prompting them to do without the additional incentive. This is a problem, because each ZEV credit earned through other means is one fewer ZEV that automakers are required to sell.

The clause currently contains no safeguards that would prevent automakers from earning ZEV credits for installing charging infrastructure that is already being funded and subsidized under existing federal or provincial programs. The credit given is based on a spending amount of \$20,000 per credit and there is also no additional safeguards that would prevent the incentivization of automakers deliberately inflating infrastructure costs to earn more credits. It also presents a potential future loophole that could be exploited by automakers lobbying to add other unrelated activities such as marketing to the list of 'ZEV related activities'.

What to Look Out For in the Final Regulation

1) Super Credits and Early Action Credits

An effective credit system cannot provide excess credits as this will oversupply the market and undermine the stringency of the regulation. If the credit system diverges significantly from awarding a single credit for each ZEV sold, this waters down the stringency of the regulation and diverges the effective sales requirement from the headline sales target. For example, early in the California ZEV sales regulatory regime, 'super credits' were awarded for specific activities, and so were 'early action credits'.

²⁸ EDC, EQT, DSF (2023) Recommendations in response to: Canada Gazette, Part I, Volume 156, Number 53: Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations.

<https://environmentaldefence.ca/wp-content/uploads/2023/03/EDC-DSF-EQT-Submission-Response-to-Draft-ZEV-Sales-Regulation.pdf>

²⁹ EMC (2023) Comments and Recommendations on Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations.

https://emc-mec.ca/wp-content/uploads/2023/06/2023-03-15_EMC-on-Canada-s-proposed-ZEV-Regulation-Final-EN.pdf

³⁰ CEC (2023) Submission on Canada's proposed amendments to emissions regulations on passenger vehicles and light trucks.

<https://cleanenergycanada.org/report/submission-on-canadas-proposed-amendments-to-emissions-regulations-on-passenger-vehicles-and-light-trucks/>

These effectively significantly diverged headline sales targets from effective targets so that for example in the year 2027, the effective sales target (27 per cent) in California is a full eight percentage points beneath the headline target (35 per cent).³¹ It will be important to watch out for movements in this direction as it would effectively lower ZEV sales targets without changing the headline number.

2) Plug-In Hybrid (PHEV) Credit Limits

Plug-in hybrid vehicles (PHEVs) are not zero-emission vehicles, despite Canada including them in their official definition of 'zero-emission vehicles'. Allowing for too many of these vehicles to be eligible for credits undermines how much emissions can be reduced. Studies have found that PHEV fuel consumption and tailpipe CO2 emissions in real-world driving are about two to four times higher than advertised.³² Currently, the draft regulations include PHEVs receiving full credits if they have an all-electric range of 80 kilometers or more and partial credits for less range. In Quebec, PHEVs only receive half (0.5) of a credit if they have a range of 80 km or more.

As a transition technology, PHEV market flexibilities should be allowed for rural, remote and northern regions where charging infrastructure may take longer to reach, but this exception should be more broadly reflective of the actual market share for new vehicles that rural and remote communities actually represent. Environmental Defence, Equiterre, the David Suzuki Foundation have recommended that they must be limited to no more than 20 per cent of total annual fleet compliance. This 20% limit is currently proposed to be from 2028 onwards in the draft regulation, with higher flexibility in earlier years.

It will be important to note whether required ranges or credit limits for PHEVs have been changed from the draft regulation in response to automaker pressure to water down the stringency of this regulation.

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³¹ Tal et. Al (2022) California's Advanced Clean Cars II: Issues and Implications. Institute of Transportation Studies, UC Davis.

https://escholarship.org/content/qt1g05z2x3/qt1g05z2x3_noSplash_07a2c4c9276a976e9fa21e8337c0e7d8.pdf?t=rcrc9d#page

³² International Council on Clean Transportation. (2020) 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-consumptionelectric-driving-and-co2-emissions/>

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ABOUT ÉQUITERRE : Équiterre seeks to make the necessary collective transitions toward an equitable and environmentally sound future more tangible, accessible, and inspiring. Since 1993, Équiterre has been helping to find solutions, transform social norms, and encourage ambitious public policies through research, support, education, mobilization, and awareness-building initiatives. This progress is helping to establish new principles for how we feed ourselves, how we get around, and how we produce and consume, that are designed for our communities, respectful of our ecosystems, in line with social justice, and of course, low in carbon.