Profiting from Pollution

How the auto industry is fighting against clean car regulations

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environmental defence

Équiterre

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Research and writing:

Nathaniel Wallace | Clean Transportation Program Manager, Environmental Defence

With contributions by:

Andréanne Brazeau | Policy Analyst – Sustainable Mobility, Équiterre

Editors:

English: Keith Brooks | Programs Director, Environmental Defence. Alex Ross | Senior Communications Coordinator, Environmental Defence

Graphic design:

Amanda Colvin | Melontree Studios

English: Alex Ross | Senior Communications Coordinator, Environmental Defence

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Sustainable Transportation Action Research Team (START), Simon Fraser University

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Executive Summary

Despite automakers' public commitments to shift towards electric vehicles, car corporations have been working through their industry associations to lobby against rules that would make them keep their promises. Instead of enforcing a 100 per cent zero-emission vehicle (ZEV) sales target by 2035 with a regulation called a Clean Car Standard, the auto industry is calling for a tripling of federal purchase incentives and more public charging stations than are needed to support ZEV sales. This allows them to appear supportive of ZEV adoption while lobbying against rules that would ensure it.

This report, supported by economic modelling conducted by Simon Fraser University's Sustainable Transport Action Research Team (START), shows that the auto industry's proposal will not meet Canada's ZEV sales goals, while costing a fortune and serving only to boost auto industry profits. Enforcing Canada's ZEV sales targets with a Clean Car Standard will not only deliver on the promise to phase out the sale of gas and diesel powered cars, but also reduce emissions by 135 million tonnes, while lowering ZEV prices for consumers by more than 20 per cent.

Auto industry lobby groups including the Canadian Vehicle Manufacturers Association (CVMA) and Global Automakers Canada are waging a campaign against the Government of Canada's plan to enforce its ZEV sales targets. The auto industry claims that they cannot meet the government's sales targets because they are being constrained by market factors such as lack of consumer demand and charging infrastructure. The reality is that they can in fact meet ZEV sales targets if they change their capital investment and product pricing priorities instead of trying to maximize their profits. In fact, a Clean Car Standard would help deploy needed charging infrastructure. This report demonstrates the compliance pathway available to automakers and sheds light on how car corporations have 'greenwashed' their climate delay tactics so they can continue prioritizing their profits over the planet.

Automakers currently set their prices and allocate their capital towards what makes them the most profit – higher margin, fuel inefficient sport utility vehicles (SUVs) and pickup trucks. Despite public demand, the auto industry has not pivoted their production to prioritize electric cars at scale and in the absence of regulation they will continue to focus on making electric vehicles for the high-priced luxury market. Enforcing Canada's ZEV sales targets to secure a more sustainable future would disrupt automakers' profit maximizing sales plans, which do not match a net-zero emissions pathway.

Our report finds that action is urgently needed to meet our climate goals: under a business-as-usual scenario, Canada will miss all ZEV sales targets. The federal government has a clear choice: either listen to the policy recommendations made by the auto industry, who want Canada to drop its international climate commitment to ensure all vehicles sold in Canada are zero-emission by 2035, or deliver real climate action for Canadians by implementing a strong Clean Car Standard.

Implementing the automakers' recommendation would:

- Cost the federal government $8 billion in the short term, $24 billion in the medium term and up to $54 billion in the long-term scenario.
- Allow automakers to capture up to 18 per cent of the purchase subsidy by raising ZEV price markups, which would then be used to reduce the price of their gasoline cars and subsidize their sale.
- Allow automakers to get a taxpayer-funded boost in profits of up to $10 billion in the long term scenario while still failing to meet the 2030 and 2035 sales targets, by capturing the value of the purchase incentive they are lobbying for.

Enforcing ZEV sales targets with a Clean Car Standard would:

- Ensure all ZEV sales targets are met, with sales even surpassing the 2026 target while cumulatively lowering greenhouse gas (GHG) emissions by 135 million tonnes by 2035.
- Force automakers to provide more affordable mass-market electric vehicles, instead of just focusing on the luxury market - leading to a median ZEV price reduction of more than 20 per cent ($7200 CAD).
- Avoid subsidizing automaker profits and gasoline car prices while ensuring that the polluting auto industry bears their fair share of the cost of transition to ZEVs instead of the Canadian public.

20%

How much a Clean Car Standard would reduce the price of an electric vehicle for the average Canadian consumer

SUMMARY RECOMMENDATIONS

Environmental Defence and Équiterre recommend that the Federal Government:

- Move forward with a Clean Car Standard with a robust credit system that is strongly enforced as modeled in this report (see Technical Report) as the primary method of achieving sales targets. A Clean Car Standard gives Canada a clear path to significantly reduce transportation sector emissions in a fair and equitable manner, and it should be considered a key part of a broader agenda for a just transition to electric mobility.

- Rely on a Clean Car Standard as the primary tool to achieve ZEV sales targets and shift the role of federal purchase incentives towards achieving industrial policy objectives that would attract investment in ZEV manufacturing and establish Canada as a global leader in supplying ethical and sustainable electric vehicles. Eligible vehicle models should be required to:

    - Be assembled in North America with union labour to create good jobs here at home.

    - Obtain certification that critical minerals sourced for batteries were ethically mined and comply with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

    - Comply with a minimum (rising) percentage of battery materials that are made from recycled content.

- Implement additional policy measures for a just transition to electric vehicles to ensure that:

    - No auto worker is left behind by delivering labour market adjustment support to those affected by the shift towards electric vehicles.

    - The social and environmental harms related to critical mineral extraction are mitigated through demand reduction measures including; shifting travel demand towards public transit and cycling, requiring improvements in electric vehicle battery efficiency, and reclaiming minerals for re-use through incentivizing battery recycling.

INTRODUCTION

Despite automakers' public commitments to shift towards electric vehicles, they have been working through their industry associations to lobby against rules that would make them keep their promises. Auto industry lobby groups including the Canadian Vehicle Manufacturers Association (CVMA) and Global Automakers Canada have proposed tripling federal purchase incentives for electric vehicles as an alternative to enforcing sales targets outlined in the federal Emissions Reduction Plan (ERP). The auto industry is attempting to greenwash their delay tactics, knowing full well that they are capturing some of the value of this incentive by hiking prices and then using that money to subsidize gasoline car sales. Instead, Canada should enforce its zero-emission vehicle (ZEV) sales targets with a regulation called a Clean Car Standard. This will reduce the price of buying a clean car, significantly reduce greenhouse gas (GHG) emissions, and make big profitable car corporations pay for it.

> *"The majority (58 per cent) of Canadians support the federal government stepping in and imposing financial penalties on vehicle manufacturers who do not produce and sell more zero-emission vehicles."*[1]

What is a Clean Car Standard?

Canada's ERP contains the commitment to enforce ZEV sales targets. The Clean Car Standard[2] is a regulation that sets clear, annually rising targets for electric car sales, and penalizes car companies that fail to shift their business plans towards a zero-emission future. It works similarly to existing vehicle emissions standards, where targets are set for automakers' fleets, and enforced by a credit system, with fines for missing credits. The federal government has set sales targets of 20 per cent by 2026, 60 per cent by 2030 and 100 per cent by 2035.[3] Properly designed, the regulation would gradually reduce and effectively phase out the sale of gasoline-powered cars by 2035 by requiring automakers to sell ZEVs instead.

Canada needs to be a climate leader - not a climate laggard

Canada's federal government is not alone in its pursuit of a strong supply-side EV policy; British Columbia, Québec, California and 15 other U.S. states all have ZEV sales requirements in place. Québec and California have updated their long-standing regulations to target phasing-out sales of new gasoline powered cars entirely by 2035 and other US States have been following suit. The U.S.-Canada market is currently divided into ZEV and non-ZEV provinces and states – in which ZEV states account for 36 per cent of the total North American car market. Adding the rest of Canada would grow this market share to 43 per cent and prompt automakers to significantly accelerate their transition towards ZEVs.[4]

The European Union is taking similar action, by moving to increase the stringency of vehicle emissions standards at an aggressive pace such that they 'zero-out' in 2035 and effectively require the sale of vehicles with zero tailpipe emissions.[5] The United Kingdom (UK) is also implementing a Clean Car Standard, set to begin enforcement in 2024. China also has a similar regulatory Clean Car Standard, tied to the near-term target of 25 per cent of sales being 'new energy vehicles' (NEVs) by 2025.[6]

Economic Modeling of Our Recommended Credit System

This report is supported by a study written by Dr. Jonn Axsen, Director of Simon Fraser University's Sustainable Transport Action Research Team (START). Dr. Axsen's study employs a sophisticated economic model that compares recommendations proposed by auto industry lobbyists to that of climate groups (Environmental Defence and Équiterre) to shed light on how the different policy options that have been proposed for Canada's ZEV future will affect outcomes such as automaker profits, sales and consumer prices (see technical report).

Drawing on best practices as outlined by Clean Energy Canada and Electric Mobility Canada,[7] Environmental Defence and Équiterre commissioned a modeling of a credit system with the following characteristics:

- One credit for each battery-electric vehicle (BEV) sold and one half credit for each plug-in hybrid vehicle (PHEV) sold;
- Banking of credits of up to three years;
- Enforcement of the ERP's sales targets (20 per cent by 2026, 60 per cent by 2030 and 100 per cent by 2035);
- A $20,000 fine for each missing credit, which we recommend should be pegged to inflation;
- A 10 per cent limit on PHEV credits allowed for compliance, and complete phase-out of PHEV credits by 2030.

We recommend limiting PHEV credits because analysis by the International Council on Clean Transportation (ICCT) found that restricting total PHEV credits allowed for compliance significantly changes the amount of emissions reduced by the Clean Car Standard. Emissions reduced – go from -52 per cent without restrictions to between -85 per cent and -92 per cent by 2050 in scenarios where restrictions on PHEV credits are in place.[8]

The Climate Stakes are High

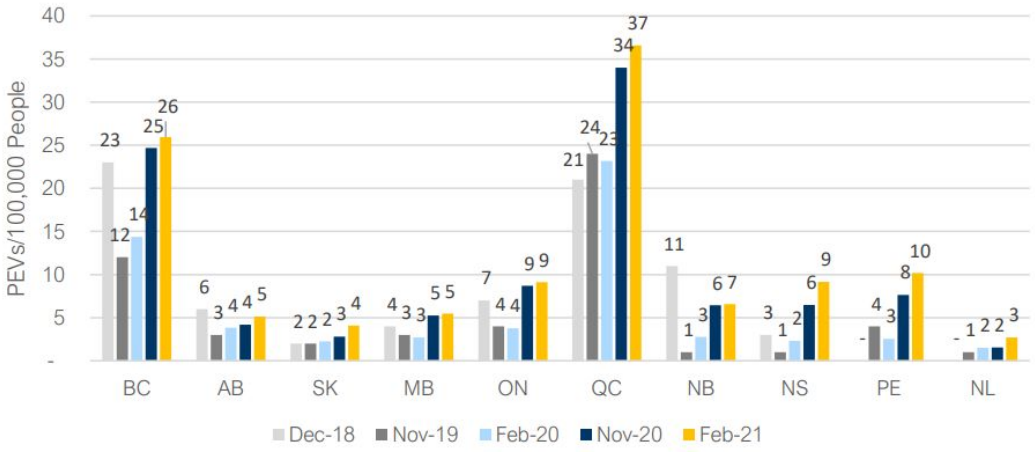
The transportation sector is Canada's second largest source of pollution, accounting for one quarter of our emissions pie. Between 2005 and 2019, total transportation emissions have risen by 14 per cent while automotive emissions alone have risen by 18 per cent.[9] A significant driver of these rising emissions is the growth of trucks and sport utility vehicles (SUVs) as a share of the vehicle fleet, now representing more than four out of five new vehicles sold in Canada.[10] Emissions from these kinds of vehicles have risen from 22 million tonnes in 1990 to 55 million tonnes in 2019 – an increase of 155 per cent.[11] To reach Canada's climate objective of net-zero emissions by 2050, every car and truck driving on the road by then must be zero-emission. But it takes a significant amount of time for new vehicle sales to filter through the fleet – so if Canada wants to reach net-zero by 2050, that means 100 per cent of all new cars sold must be zero-emission by at least 2035. This goal was affirmed by Canada with a joint declaration at COP26 in Glasgow.[12] Right now, the clock is ticking to put in place the policy measures needed to rapidly transition the auto industry towards the goal of only selling ZEVs by 2035.

WHY WE NEED A CLEAN CAR STANDARD

In February of 2021, a majority of Canadian car dealerships (55 per cent) reported not having a single EV in stock, and nearly two thirds (64 per cent) of dealerships reported wait times for electric car orders of three to six months.[13] These wait times have significantly worsened after gas prices increased due to Russian aggression in Ukraine – with reports now indicating buyer wait lists that are up to three years long.[14]

A Clean Car Standard would solve the problem of low ZEV supply. For example, there is a significant disparity in EV availability between provinces that have already adopted regulations (BC and Quebec) and provinces that haven't. Adjusted for population, British Columbia has over five times the number of EVs available to buy as neighbouring Alberta, and Quebec has over four times the number of EVs available to buy as neighbouring Ontario.

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



Source: Dunsky ZEV Availability Report

70% **Of Canadians say wait times are making them less likely to consider buying an electric vehicle**

82% **Of Canadians agree that we need policy to increase supply and reduce wait times of zero-emissions vehicles to meet sales targets**

83% **Of Canadians support national standards for ZEV availability so Canadians all over the country can have an equal opportunity to purchase one**

Automakers have responded to this by highlighting the number of new EV vehicle models they are bringing to market, but they often neglect to mention that they are not producing them in enough volume to meet sales targets and current market demand. Our modeling indicates that absent enforcement of Canada's EV sales targets, a business-as-usual scenario will mean we miss the sales targets outlined in the ERP. By 2035, current policies will only take us 39 per cent of the way to our 100 per cent ZEV sales target.

Despite these persistent shortages and long wait times for buyers, automakers often deny that a supply problem for ZEVs exists.

> *"We oppose the introduction of a regulated ZEV sales mandate as it addresses a supply problem that no longer exists."*
>
> - Brian Kingston, President and CEO of the Canadian Vehicle Manufacturers' Association (CVMA), February 2022[15]

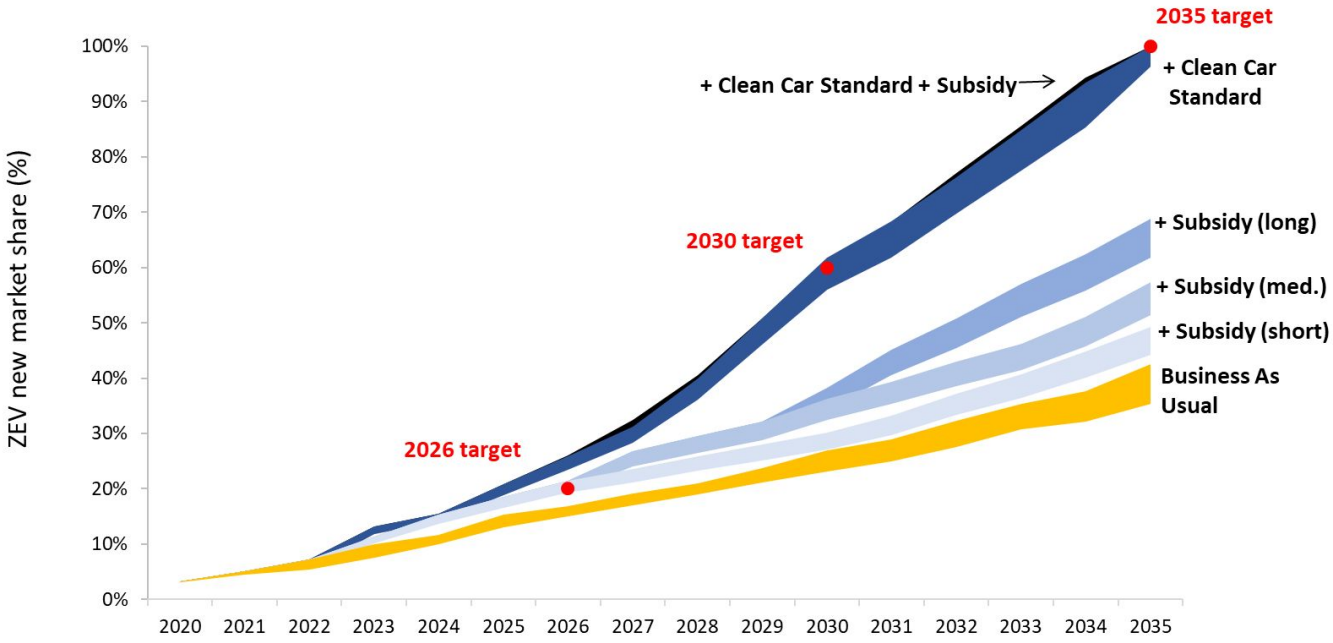
Jack Hollis, Toyota's Executive Vice President of Sales recently said that we won't reach sales targets "because, fundamentally, consumer demand just isn't sufficient."[16] Automakers are using excuses for why they should not be expected to meet sales targets, including claims that charging infrastructure is insufficient, and purchase prices for EVs are just too high. They will then promote misinformation by implying that the regulation is imposed on consumers rather than automakers - in effect "regulating Canadians to buy vehicles they can't afford or charge."[17] The industry continues to push this messaging as their rationale for why regulations should not be imposed upon them, despite the fact that a Clean Car Standard will actually improve access to EV charging and reduce EV prices.

WHAT DOES IT TAKE TO MEET SALES TARGETS? CHARGING INFRASTRUCTURE

Even a significant buildout of charging infrastructure won't make us reach our sales targets alone (which is built into business-as-usual assumptions in our model) - and neither will adding massive purchase incentives on top of that, which is what automakers have solely focused on recommending. A Clean Car Standard (using our recommended credit system) is what is needed.

Not only does it meet all sales targets, but it significantly blows past the near-term 2026 sales target of 20 per cent, achieving 25 per cent in that year. Given these results, the federal government could even consider increasing its 2026 target to 25 per cent sales, which is in line with the International Energy Agency's (IEA) net-zero scenario.[18]

Figure 2. Zero Emission Vehicle Sales Pathways in Modeled Scenarios



Source: See Clean Car Standard Technical Report

The auto industry is setting an impossibly high bar for the level of charging infrastructure they believe will be required to support the rollout of the influx of EVs that will be hitting the road in the years to come. They have stated that until that bar is met, Canada should halt its plan to implement a Clean Car Standard. This is one of their strategies to 'greenwash' their delay tactics against this regulation. It has so far been effective because Canadians agree that more electric vehicle charging infrastructure is needed but have little idea of how much that might be.

For example, in a submission to the Government of Canada, the CVMA claimed that Canada would fail to reach its sales targets unless it built enough public chargers to reach a consistent ratio of one charger for every 10 EVs[19]. In reality, a study by Dunsky Energy + Climate Advisors, commissioned by Natural Resources Canada found that to support Canada's ZEV sales targets the number of public chargers would only have to be one for every 23 to 24 EVs by 2030, and could continue to rise in later years.[20]

Creating market certainty with a Clean Car Standard is crucial to reaching needed charging infrastructure deployment. Those higher ratio numbers are needed because there is currently not enough charging demand to justify a business case for the private sector and public utilities to invest in deploying charging infrastructure.[21] Implementing a Clean Car Standard would create a transformative market signal which would create the business case for greater investment in EV charging infrastructure, as chargers tend to be under-utilized, and need a greater amount of charging demand to make them economical.

It is also wrong for automakers to suggest that charging infrastructure is the primary barrier holding back EV adoption. Studies have shown that boosting public charging to universally available levels – making it as convenient as gassing up – only boosts EV sales by 1.5 per cent.[22] It is an important part of the policy solution, but not an actual replacement for stronger policies – as auto industry lobbyists like to suggest. This is why even incorporating a significant buildout of charging infrastructure in our model's business-as-usual assumptions fails to meet all sales targets in the absence of strong policies to accompany it.

Canada will need to have around 50,000 publicly accessible chargers by 2025, and 200,000 by 2030.[20] The federal government's current funding and charging deployment programs have the target of supporting 84,500 new chargers across Canada by 2027. This means that while we are on-track to support our near-term 2026 sales target, more must be done to meet 2030 sales targets. The total cost for charging needs by 2050 will be $20 billion and this will need to be shared between the public and private sector.

While the auto industry's desire for more charging infrastructure is welcome, they are setting a very high standard for it - while not setting a high standard for themselves. Increasing access to charging is very important and its rollout should be based on evidence-based policies, including a Clean Car Standard. To meet sales targets - everyone must do their part, and that means the auto industry has to take some responsibility, instead of trying to use real concerns like 'charging anxiety' as a weapon against a regulation which would improve charging access.

WHAT DOES IT TAKE TO MEET SALES TARGETS?
PURCHASE PRICE

Automakers often point to the high prices of EVs being one of the key reasons 'the market isn't ready' for ZEV adoption, yet they ignore the fact that they are the ones setting prices in the first place. They control the price 'markup' above the cost of production across the models in their fleet and can change these markups at will to respond to market conditions and government policy, or to grow profit margins. The perpetual gap between the price of ZEVs and gasoline vehicles are a series of goalposts that automakers can constantly move, in order to maximize profits.

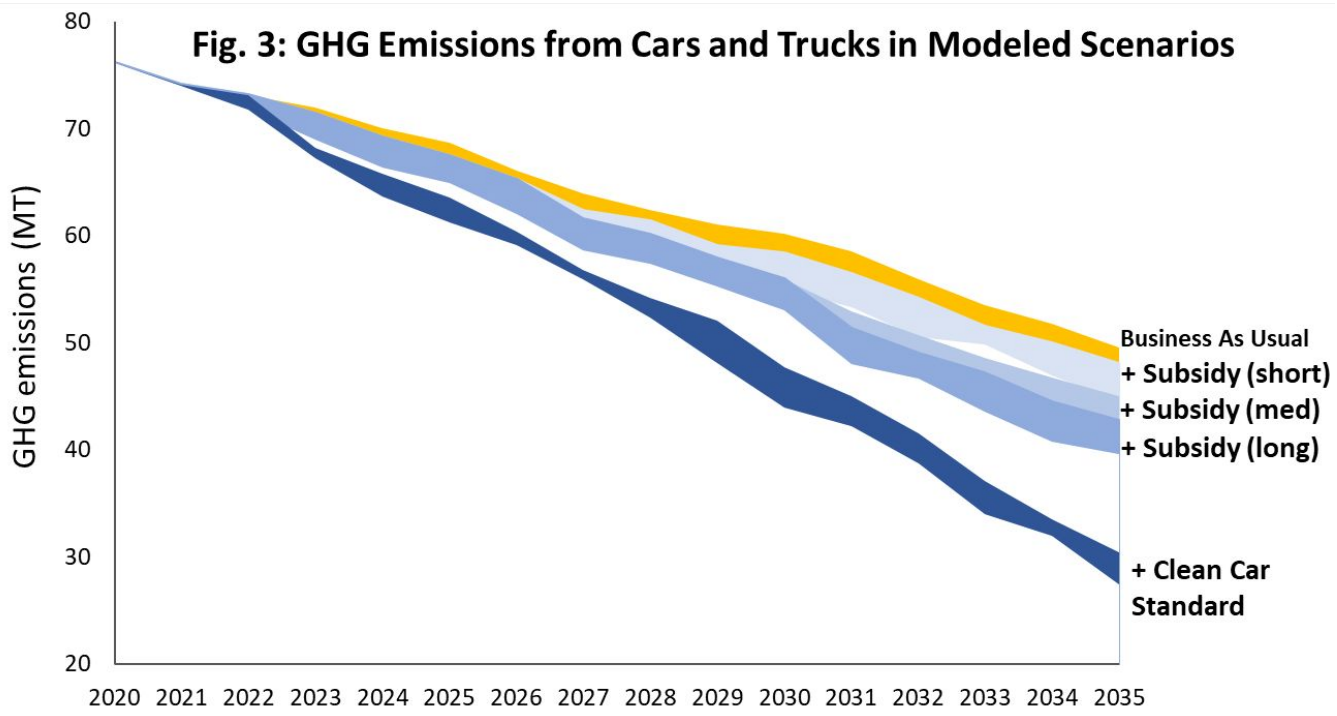
The joint lobbying effort by the Canadian Vehicle Manufacturers' Association, Global Automakers Canada and the Canadian Automobile Dealers Association has recommended that Canada triple its ZEV purchase incentive program from a maximum of a $5,000 rebate to $15,000 as an alternative to a Clean Car Standard.[23,24] They do not specify how long these purchase incentives are supposed to remain in place, but indicate that it should be the primary tool for accelerating ZEV adoption in Canada instead of regulations on automakers.

As a result, we modeled their recommendations over three time horizons (up to 2026, up to 2030, and up to 2035) once again assuming the same parameters for increasing access to charging infrastructure. We find that in each scenario, the automaker recommendation fails to meet the 2030 and 2035 sales targets. Even tripling the federal iZEV purchase incentive program up to 2035 only reaches a 65 per cent ZEV market share. Despite not meeting sales targets, the fiscal cost for the purchase incentives are significantly higher than the fiscal cost of the Clean Car Standard – rising up to $54 billion in the long term scenario, of which automakers are able to capture $10 billion by raising ZEV prices.

A Clean Car Standard would result in a 58-62 per cent decline in annual carbon emissions from cars and trucks below today's levels by 2035, and would cumulatively reduce carbon emissions by 135 million tonnes. Comparatively, even tripling purchase incentives all the way to 2035 only reduces annual emissions by 42-45 per cent and cumulative emissions by 39 million tonnes.

A Clean Car Standard would cumulatively reduce carbon emissions by:

135 Million Tonnes



Source: See Clean Car Standard Technical Report

There are several reasons why purchase incentives are much less effective than a Clean Car Standard at driving ZEV sales. Under a Clean Car Standard, automakers will cross-subsidize their fleet to meet sales targets, and the profits they make from selling gasoline cars are used to lower the price of ZEVs. This results in a small increase in the price of gasoline cars but a much greater reduction in the price of ZEVs. A Clean Car Standard would result in a drop of median ZEV prices by approximately $7,200 CAD below the baseline price trajectory through the years up to 2035. In effect, this is because it forces automakers to put affordable mass-market ZEVs on the market instead of just focusing on high-priced luxury ZEVs.

The modeling predicts that when ZEV sales are subsidized through the tripling of federal purchase incentives, automakers will actually raise their ZEV price markups to capture a portion of the value of the incentive. At the same time, they will **cross subsidize their fleet in the wrong direction by marginally reducing prices on their gasoline vehicles by an average of $2300 CAD** below baseline cost through the period 2023-2035.

An increase in purchase incentives is a less effective method of spurring ZEV adoption compared to a Clean Car Standard because they notably have a 'free rider' problem. This is because in most cases, they financially benefit people who would already buy an electric car regardless of whether the subsidy exists or not.[25,26] The cost efficiency of this policy only improves when it is more closely aligned towards marginal buyers who would otherwise not be able to buy a ZEV in absence of the rebate - lower-income earners. As eligibility for the iZEV program does not factor in income of the recipient, the fiscal cost of each 'induced sale' that the policy creates (that would not otherwise occur in its absence) is over $32,000 in each scenario.

AUTOMAKERS WOULD RATHER SELL YOU A GAS GUZZLER

Automakers will claim that they cannot shift their production to ZEVs due to supply shortages of input materials like critical minerals and semiconductors. In reality, analysis by NGO Transport & Environment (T&E) has proven that there is enough supply of lithium and nickel to produce 14 million battery-electric vehicles (BEVs) in 2023 and 21 million BEVs by 2025 globally, which are respectively 55 per cent and 50 per cent more than the expected market in those time periods.[27] Semiconductor manufacturers worldwide have also significantly increased production in response to chip shortages. In 2021, the construction of 19 new high-volume factories began and a further 10 are poised to break ground by the end of 2022.[28] The United States has also recently passed the CHIPS Act, a $52 billion (USD) subsidy to domestic semiconductor manufacturing.[29] Industry analysts are already predicting a 'chip glut', and that auto manufacturers are now hoarding more chips than they actually need.[30]

Automakers are actually resisting shifting production to EVs at the pace required to meet Canada's sales targets because it would mean lower profits than business as usual. Our modeling indicates that a Clean Car Standard would result in a 7.5 per cent decline in their cumulative profits compared to a business-as-usual scenario up to 2035. However, their annual profits would still continue to rise by 15 per cent above today's levels. This profit squeeze is because EVs have smaller margins compared to gas guzzlers - so they make less money selling them. They even spell this out explicitly in reports to their shareholders:

> *"Ford's near-term results are dependent on sales of larger, more profitable vehicles, particularly in the United States. A shift in consumer preferences away from larger, more profitable vehicles with internal combustion engines (including trucks and utilities) to battery electric or other vehicles in our portfolio that may be less profitable could result in an adverse effect on our financial condition or results of operations in the near term."*
>
> - Ford Motor Company, 2021 Annual Report[31]

Keep subsidizing the luxury EV market – or reshape it?

Automotive manufacturing is a low-margin, high-volume business, characterized by high capital intensity and large economies of scale.[32] It is a sector dominated by a small number of giant multinational corporations, as it requires large capital investments in high-volume production plants focused on one or a few models, which create very high barriers to entry for outsiders, and high barriers to exit, due to these sunk investments. Automakers don't make significant profits on each car sold, so they sell a high volume of them to make up for it. This is why automakers will almost always prefer to sell vehicles that have higher profit margins, such as SUVs and pickup trucks. Car corporations are only able to profit from mass-market ZEV models if they scale production, achieve lower production costs from 'economies of scale' and can offer more competitive prices.[33]

The only ZEVs that are profitable to sell at low production volumes are high-priced, luxury models. These are the models car companies have focused on making, instead of affordable mass-market models. Despite recently announcing new models with lower base prices – automakers are actually just selling higher priced, fancier versions of the same vehicles – that fit well within the luxury market. In July 2021, the average advertised price for these new ZEVs in the U.S. was $47,636 USD ($59,711 CAD) – while the average selling price was one third higher, $61,251 USD ($76,778 CAD).[34] The Ford F-150 Lightning is the worst culprit of this trend – selling at more than double the starting price of $40,000 USD ($50,140 CAD) on average – because the automaker has only allocated one fifth of its total production capacity to the cheaper 'pro' version of the truck. Left to their own devices, automakers will continue only making EVs to serve the high priced, luxury market, while keeping their core operations focused on selling gasoline cars.

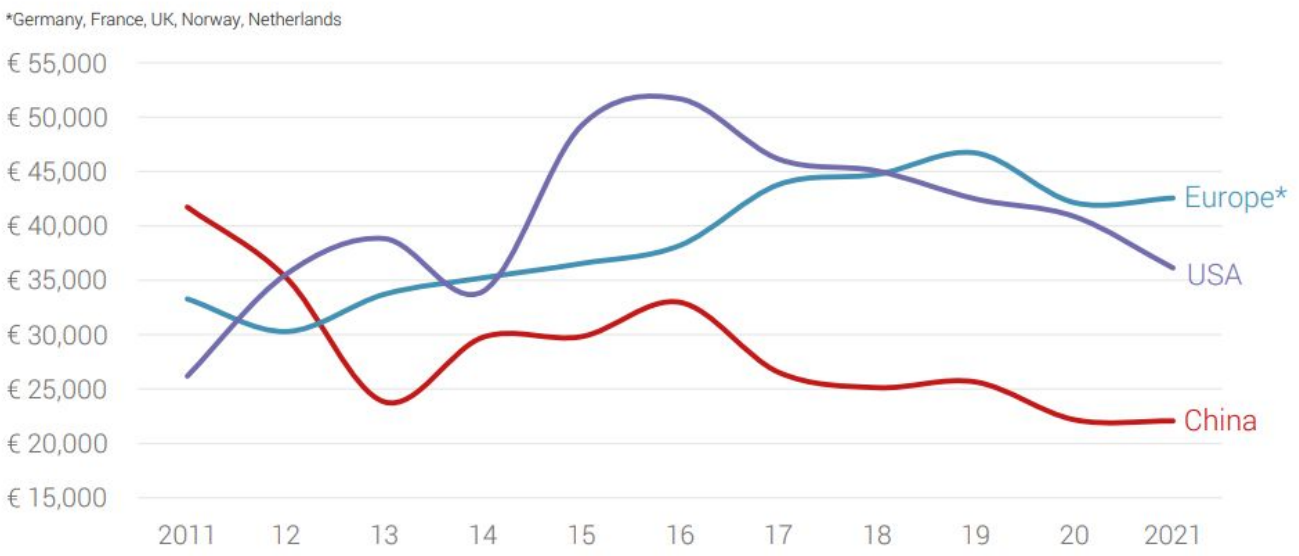
> *"It's not that auto companies don't have affordable electric cars; it's just that they aren't making them, choosing instead to crank out more lavish (and profitable) versions."*
>
> - Kyle Stock, Senior Correspondent, Bloomberg[35]

The profit maximizing scenario for automakers involves allocating their capital and pricing strategies towards selling the most profitable polluting vehicles, for the longest time horizon possible – and keeping ZEVs to the luxury market – regardless of the effect this has on the climate. Automakers claim that this is all about consumer preferences, but they aggressively shape those preferences towards what makes them the most money by allocating nearly 80 per cent of all their advertising towards gas guzzling SUVs and trucks.[36]

Enforcing Canada's ZEV sales targets to secure a more sustainable future would disrupt automakers' profit maximizing sales plans and force them to transition towards ZEVs at a pace dictated by the needs of the planet, rather than their bottom lines. Rather than subsidizing their low volume, high-priced luxury ZEV models, requirements to meet sales targets would force automakers to offer more mass-market vehicle models at affordable prices. This is exactly the path that China has taken, and is one of the reasons why EVs are significantly cheaper in the Chinese market.

The best selling EV in China is the Wuling Hongguang Mini, built by General Motors (GM) in partnership with a Chinese state-owned firm, SAIC Motor. Its price comes in at around $5000 USD ($6,267 CAD). Part of the reason why the vehicle is so cheap is its rather sparse design, and lighter safety regulations in China mean that fewer features required in North American or European car markets come standard. However, the more important reason why the vehicle is so cheap is that the profit margin on each vehicle sold is less than $14 USD ($18 CAD).[37] One reason is because China has a Clean Car Standard and automakers can earn valuable credits from gaining EV market share – which can be passed on into reduced prices for consumers. The other reason is that because automakers are required to meet sales targets, they develop and sell more affordably priced mass-market models rather than focusing on the luxury market.

Figure 4. Volume Weighted Average Retail Price of BEVS Sold



Source: Jato, EVs: A Pricing Challenge

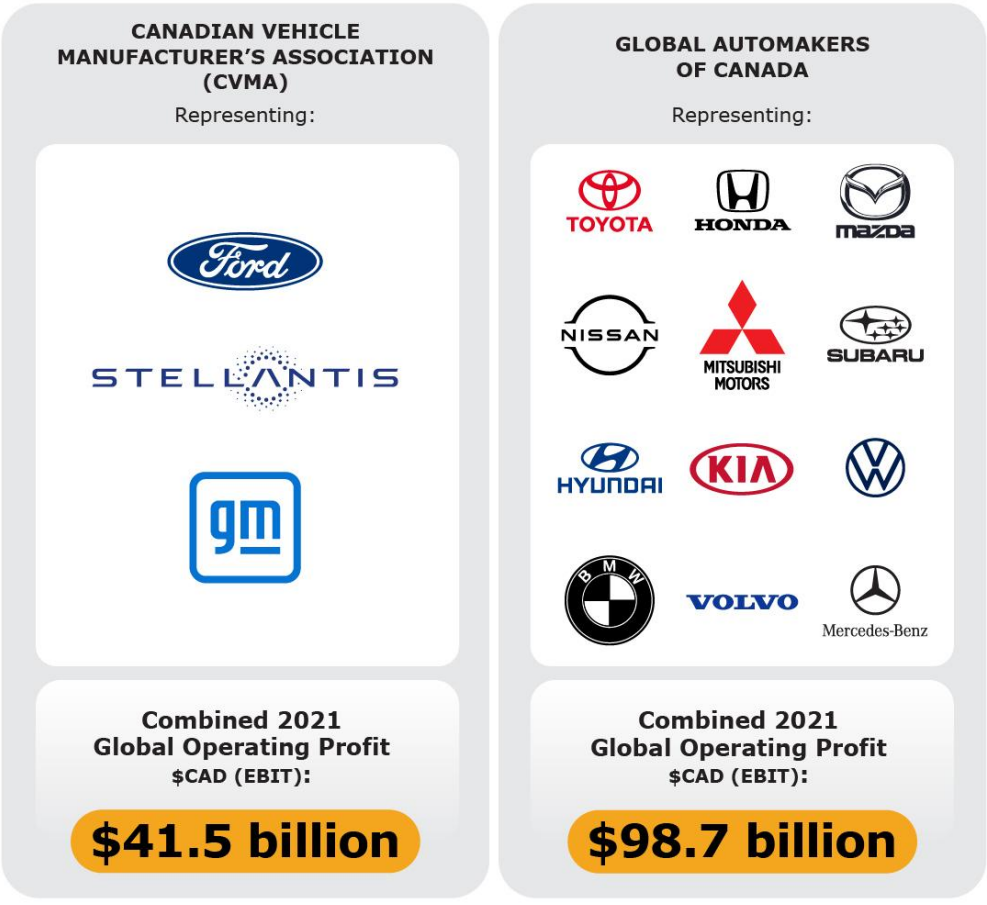
China has increasingly shifted away from purchase incentives as their primary driver for ZEV sales and instead focused more on regulations.[38] Since 2011, the volume weighted average retail price for a ZEV in China has decreased by 47 per cent while it has increased by 28 per cent in Europe and 38 per cent in the United States.

Rather than focusing on larger subsidies for the luxury ZEV market, Canada should instead look at the Clean Car Standard as a strong regulatory tool capable of reshaping the ZEV market towards mass-market affordable models. That doesn't necessarily mean mini cars will take off in Canada. What an affordable mass-market model looks like in the Canadian market will likely look different from what it looks like in the Chinese market.

Making Polluters Pay

It's right to ask that polluters pay their fair share for the transition to a clean economy. They certainly can afford it. Last year, the 'big three' North American manufacturers Ford, Stellantis and GM collectively made $41.5 billion (CAD) in operating profits.[39] Looking at foreign manufacturers – Toyota made $25.1 billion (CAD). Volkswagen made $27 billion (CAD). GM even recently announced that they will be buying back $5 billion of their own shares and boosting dividends,[40] despite GM CEO Mary Barra stating on an earnings call earlier this year that GM wasn't going to restore their stock dividends because their priority was to accelerate their EV investments.[41]

It's clear that Canadians care more about the future of the planet than the bottom lines of multinational car corporations. According to a poll conducted by Abacus Data, 74 per cent of Canadians think automakers have a responsibility to shift towards making zero-emission vehicles, and away from gasoline vehicles – even if it means reducing their profits.[42]



Earnings before interest and taxes (EBIT), converted to $CAD using 2021 Bank of Canada Exchange Rates

DELAY TACTICS DISGUISED AS CLIMATE ADVOCACY

Automakers have a long history of being opponents to progress on climate change. In the 1960's, a scientist working at GM named Ruth Reck found in her research that emissions from car tailpipes were causing global heating, and would result in dire consequences for the planet. Reck presented her findings on climate change to three top executives at GM's corporate headquarters.[43] Despite knowing for decades that their products were contributing to global heating, automakers sowed doubt about climate science and lobbied against regulations which would make them clean up their act.

James Hansen's famous testimony to congress about the dangers of climate change, and the creation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 prompted the auto industry to join forces with other polluting industrial sectors to sow doubt about climate science.[44] The three major North American auto manufacturers, Chrysler, GM and Ford, along with the American Automobile Manufacturers' Association (AAMA) joined the 'Global Climate Coalition' (GCC). The GCC represented about 40 corporations and industry associations from carbon-intensive sectors such as oil and gas which worked to undermine climate science and action on climate change, in particular with the objective of stopping the United States ratifying the Kyoto protocol.[45]

> *"I think it's the moral equivalent of a war crime. I think it is, in many ways, the most serious crime of the post-World War Two era, anywhere in the world. The consequences of what they've done are just almost unimaginable."*
>
> - Former US Vice-President Al Gore on the activities of the GCC[46]

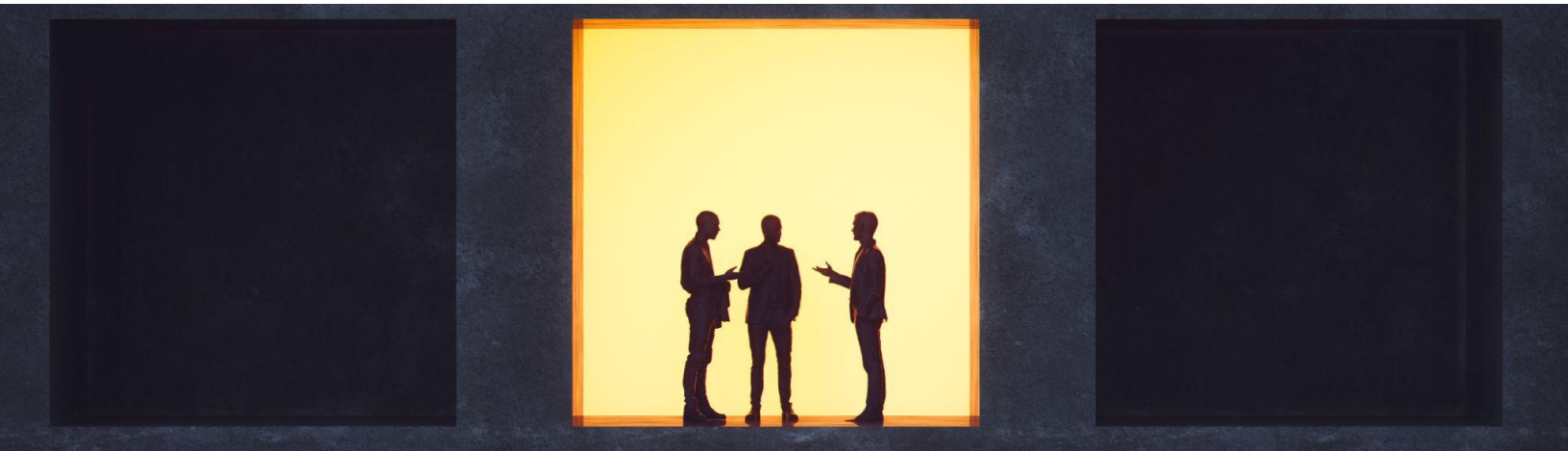
Ford and GM also gave generously to think tanks such as the American Enterprise Institute, the Competitive Enterprise Institute (CEI), the Cato Institute and the Heritage Foundation which disputed the scientific consensus on anthropogenic climate change. GM continued to donate money to the CEI all the way up to 2008, even after its release of a controversial 2006 advertisement[47] that said carbon emissions actually benefit humanity.

As the political consensus around climate action has shifted, so have automaker strategies. Automakers now understand that their stock price is rewarded when they make public commitments about shifting into the EV space.[48] In March of 2021, Volkswagen CEO Herbert Diess enthralled investors with his vision for turning his company into a global leader in electric cars – promising to deliver 1 million battery-powered and plug-in hybrid vehicles in that year, and soon build half a dozen factories in Europe alone. The stock shot up by 29 per cent on a single day.[49] Most automakers have made pledges to shift to making EVs over the coming decades but, behind closed doors they have been working to delay governmental regulatory action. Hiding behind the veil of their industry associations, automakers are strategically distancing themselves from the lobbying activities being conducted on their behalf.[50]

Automakers' industry associations disguise their delay tactics as climate advocacy.[51] They will claim that a Clean Car Standard will do nothing to help Canada meet its sales goals - despite its undeniable success in all the jurisdictions that have one, and instead ask for excessively high levels of purchase incentives.[52] It is a rhetorical strategy done in bad faith in order to divert attention from the real culprit for slow EV adoption, automakers themselves - how they price their vehicle fleet, and how they allocate their capital. Championing increased purchase incentives allows the auto industry to simultaneously appear supportive of EV adoption while lobbying against regulations which would ensure it. Blaming the government for the high price of EVs allows them to divert attention away from the fact that it is automakers who are the ones setting prices and choosing to keep electric vehicles unaffordable by primarily only making models for the luxury market.

If they can convince the government that the best solution is increased subsidies, instead of regulation, they can continue to capture the value of purchase incentives, use it to lower the prices of gasoline cars, and keep selling them far into the future – regardless of the consequences to the climate.

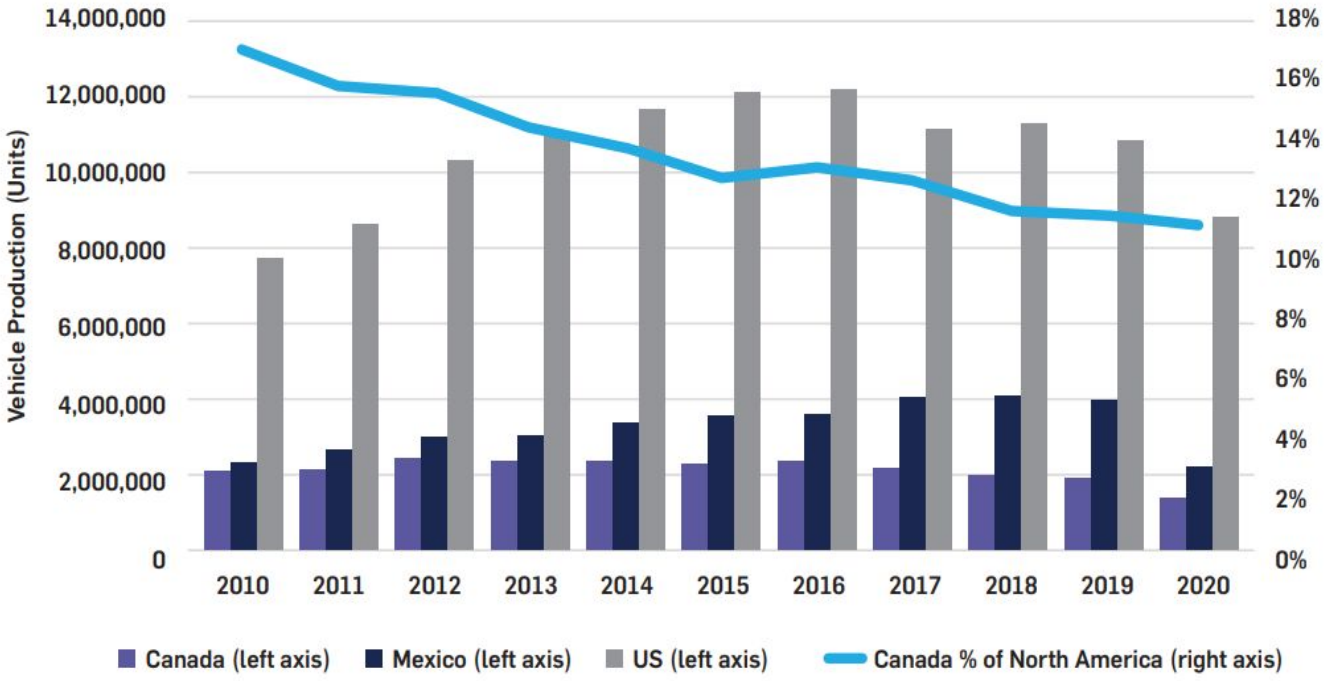
Purchase incentives further benefit the auto industry because they can better protect their profits while transitioning to EVs and instead shift the related costs onto the government. To showcase this, we analyzed a scenario where purchase incentives are increased at the same time as a Clean Car Standard is implemented up to 2035 and found that this softens the cumulative impact of the regulation on automaker profits by 3.3 per cent – a profit reduction of 4.2 per cent rather than 7.5 per cent – while making no difference whatsoever in increasing ZEV sales.



ENSURING A JUST TRANSITION TO ZEVS

The transition to ZEVs presents a historic opportunity to revive Canada's diminished auto sector. Canada has gone from a $4.5 billion automotive trade surplus in 2005 to a record trade deficit of more than $37 billion in 2021. Since 2001, Canada's auto sector has shed one-fifth of its workforce, or about 35,000 good-paying largely unionized jobs, due to capacity reductions, layoffs and plant closures.[53] In 2019, auto production fell to 1.92 million vehicles, well below the historic peak of more than 3 million reached in 1999. Ontario's share of North American vehicle production has dropped to about 11 per cent in 2020 from more than 17 per cent in 2010.[54]

Figure 5. North American Vehicle Production (2010-2020)



Source: Keenan & Sweeny (2022) The Drive to Survive and to Grow: How Ontario can succeed in the EV era. Ontario 360.

Recent investments in EV manufacturing in Ontario, delivered in part thanks to collective bargaining demands from auto workers, have been very positive developments. However, shifting to EV production will have consequences on the labour market, and the Government of Canada must take actions now to mitigate the coming disruption.

On one hand, it takes fewer workers to build an EV than it takes to build a gasoline vehicle, particularly in the automotive parts sector. Of the 303 component parts attached to a gasoline engine, more than half are non-transferable to an EV – putting roughly 16,000 Canadian jobs (roughly one-fifth of the total) in high-impact sectors manufacturing these parts at risk.[55] Retooling vehicle manufacturing plants away from gasoline car production to electric vehicle production also takes several months to more than a year - during which auto workers may have no income. Planning the transition and taking action now will ensure no one is left behind.

On the other hand, going electric can also be a significant job creation opportunity. One study by Clean Energy Canada and the Trillium Network for Advanced Manufacturing found that converting Canada's vehicle assembly footprint to EVs could lead to over $18 billion added annually to Canada's gross domestic product (GDP) and create nearly 124,000 direct and indirect jobs. Related battery cell manufacturing to support this final assembly could add $11 billion to Canada's GDP annually, and add 30,000 direct and indirect jobs by 2030.[56]

In short, there will be significant disruption in the labour market and Canada must prepare to expand the social safety net to ensure that no auto-worker or other worker impacted by the climate transition is left behind. In particular, this means expanding and improving access to employment insurance, delivering a guaranteed minimum level of benefits, providing bridging supports to early retirement or re-training, and replacing a far greater share of lost income.[57]

Reviving Industrial Policy

The best way for Canada to ensure that there is a significant net increase in auto sector employment is to ensure that a greater share of global EV and battery production occurs in Canada. Canada should follow the lead of the United States and utilize purchase incentives primarily as a tool for industrial policy and justice for auto workers as part of an 'on-shoring' agenda, rather than primarily as a tool for EV adoption. As our modeling indicates, adding a $15,000 federal ZEV purchase incentive to a policy framework that already has a Clean Car Standard in place has no impact whatsoever on increasing ZEV sales.

Purchase incentives are a less effective tool to spur EV adoption, compared to a Clean Car Standard. Incentives have clear limitations; they are regressive and inefficient. Studies have found that 90 per cent of all EV tax credit benefits are distributed to the top 10 per cent of income earners,[58] and predominantly distributed to more affluent neighborhoods,[59] which only emphasizes the need to make them more equitable for all households.

With this in mind, the path to meeting Canada's ZEV sales targets should utilize the Clean Car Standard as the primary policy tool to drive ZEV adoption, as it results in meeting sales goals in a faster, more efficient and equitable way than policy alternatives. It reduces ZEV prices without unnecessary subsidization of the auto industry and it does not result in automakers also reducing prices for their gasoline vehicles.

ZEV purchase incentives have been very successful at driving early adoption, but they should only be seen as a complementary tool to strong supply-side policy for mass-adoption. Going forward, they should be considered a key industrial policy tool for driving investment in ZEV and battery supply chains in North America, while delivering justice for auto workers. This can be done by taking inspiration from America's Inflation Reduction Act and attaching eligibility for the federal ZEV purchase incentive (iZEV program) to new requirements for final vehicle assembly in North America with union labour.

Industrial Policy Works

The United States' landmark climate legislation, the Inflation Reduction Act (IRA), lifted the 200,000 vehicle cap on its existing $7,500 USD EV purchase incentive, and has tied eligibility to only vehicles with final assembly in North America, battery inputs built in North America, and with critical minerals sourced from America or countries that have a free trade agreement with the US. As a result of these requirements, German automakers VW and Mercedes-Benz quickly inked an agreement with the Canadian Government securing access to raw materials such as nickel, cobalt and lithium for battery production.[60] Hyundai indicated that they would accelerate plans for building an EV and battery plant in the United States,[61] and Honda as well as LG followed up soon after by indicating they now had plans to build a $4.4 billion battery plant in America.[62] Tesla is also shifting its planned investments in battery cell manufacturing from Germany to the United States in order to gain access to the EV tax credit in the Inflation Reduction Act.[63]

To address ethical mining concerns, Canada should explore regulatory requirements for critical mineral sourcing. This would ensure that Indigenous rights are upheld while labour and environmental standards are prioritized throughout the global supply chain. Critical mineral extraction overseas is often rife with human rights abuses, and environmental destruction.[64] The Government of Canada should explore developing a certification process where the critical minerals sourced for EV batteries must meet minimum ethical standards.[65] Incorporating these standards in future trade agreements with countries which supply these resources, could be one method of ensuring compliance.

Canada is committed to working with the United States to develop an integrated ZEV supply chain in North America.[66] On-shoring the ZEV supply chain has the potential to increase the share of global extraction that would be regulated by Canadian authorities, which should set high standards on mining activities.[67] It is of the utmost importance that on-shored critical mineral extraction does not lead to social harms often created by extractive industries or lead to the weakening of environmental standards for projects.[68] The extraction of critical minerals must be conditional on the consent of Indigenous communities, must deliver substantial benefits to those communities and not leave communities with an environmental mess to clean up.

Saving the Ring of Fire's Carbon Sink

One of the most effective ways of reducing carbon emissions is the protection of natural carbon sinks, such as peatlands, which are particularly effective at capturing carbon. The world's largest peatland carbon stock is located in Canada, and these vast and mostly intact peatlands include the world's second largest peatland complex, the Hudson Bay Lowlands.[69] Described as 'breathing lands' by the elders of Kitchenuhmaykoosib Inninuwug First Nation,[70] the Hudson Bay Lowlands are currently estimated to store 30 billion tonnes of carbon.[71] Located approximately 500 kilometres northeast of Thunder Bay, and inside the Hudson Bay Lowlands, Ontario's Ring of Fire contains significant critical mineral deposits including nickel, copper, and cobalt which are materials needed to support the shift to ZEVs. One estimate of the potential GHG emissions impact of development in the carbon sink area covering roughly 2,127 kilometres of mining claims in the Ring of Fire region is between 130 and 250 million tonnes.[72] The area covered by mining claims has roughly doubled since this estimate was published.

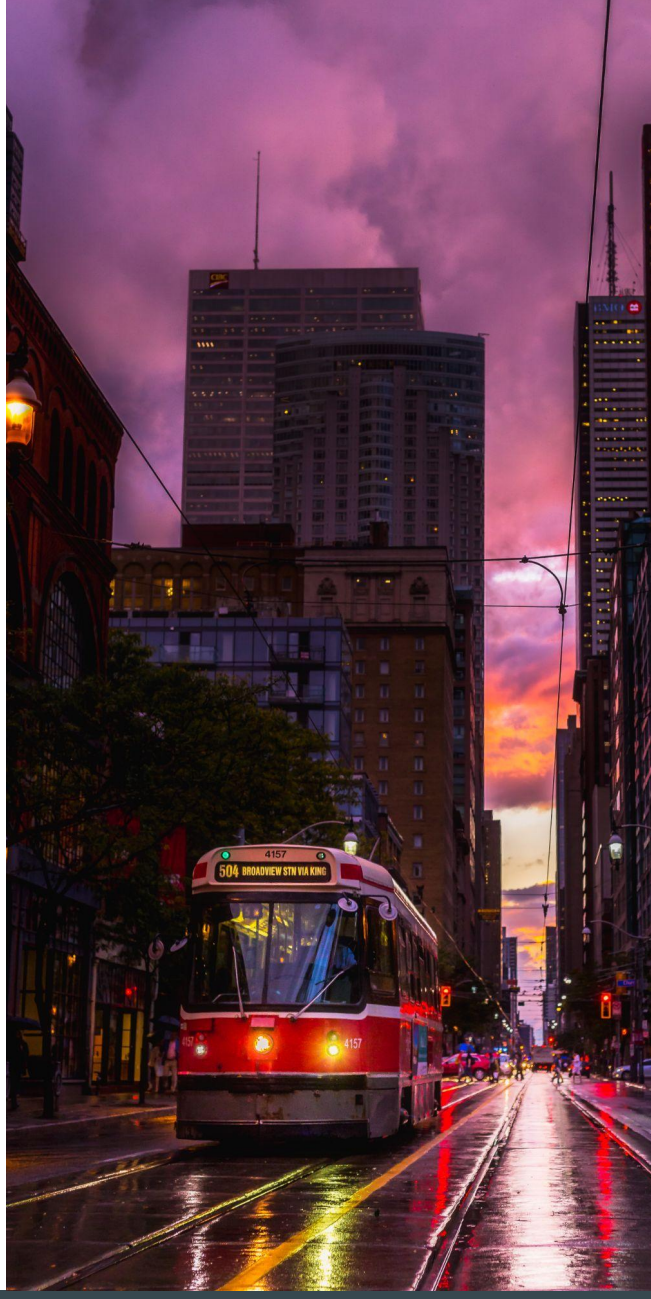
130 to 250 Million Tonnes

The GHG emissions impact of developing the carbon sink area of the Ring of Fire covered by mining claims

Great care must be taken to avoid disturbing this natural carbon sink as much as possible. Policymakers must avoid unintentionally putting more net carbon into the atmosphere in their attempt to mine the materials that can reduce it. The forthcoming regional environmental impact assessment must give Canadians a clear understanding of how much mining activity could increase carbon emissions by disturbing this carbon sink before permission to dig is granted. It is of the utmost importance that attempts to accelerate the mining permitting process does not lead to cutting corners on environmental obligations, and that includes assessing the real impact on carbon sinks.[73] Canada has an opportunity to catch up on transport electrification, and it has to do it right.

The Need to Reduce Demand

Transitioning to EVs is not an end-all solution to reducing transportation emissions. The government must also invest in infrastructure that would help shift travel demand towards more public and active modes of transport to increase emission reductions in the near term.[74] Among many benefits, shifting travel demand will also be necessary to prevent a potential future increase in congestion caused by cheaper operating costs of ZEVs, creating a 'rebound effect' of more driving. The more Canadians who don't need to buy a ZEV because they can rely on good public transit service, or safe cycling infrastructure instead – the less demand there is for critical minerals, alleviating issues related to their extraction.[75] Other complementary solutions include reclaiming these minerals through battery recycling, as developing reuse and recycling streams to recover approximately 90 per cent of the critical battery materials can reduce the global need for new mining by 20 per cent by 2040 and 40 per cent by 2050.[76] Provinces should also be encouraged to adopt battery management regulations that will maximize the full battery lifetime.



Making Canada an EV Battery Recycling Powerhouse

The federal government has a role to play in fostering the development of effective collection and recycling of EV batteries at end of life. The federal government should leverage the iZEV purchase incentive program to drive these changes by making model eligibility conditional on meeting a recycled content requirement for the battery which rises over time as the market develops. The federal government can also help to ensure that batteries are built to be easily recycled in the first place, for example by establishing battery labelling standards to ensure cell chemistry information can be used to simplify reuse and end-of-life recycling.[77] In addition, it will be important for the federal government to monitor the pollution impact of the full life cycle of EV batteries to evaluate whether pollution prevention measures are needed over time, as at least one common element of EV batteries (cobalt) is listed as a toxic substance under the Canadian Environmental Protection Act (CEPA).[78]

Policymakers must also examine the potential of incentivizing improvements in battery efficiency within the Clean Car Standard or mandating it through future regulatory initiatives to mitigate the environmental and road safety impacts of larger and heavier electric vehicles.[79]

Just as automakers have needed to improve fuel efficiency to save drivers money and reduce GHG emissions from gasoline vehicles, the same should be considered as we transition to a ZEV fleet. The less electricity needed to drive a kilometre, the fewer the emissions from electricity generation and the more money saved by drivers. With efficiency improvements, range improvements could be delivered without growing battery size, leading to less demand for critical minerals, fewer embodied emissions and potentially cheaper production costs that could be passed onto consumers.[80] This would also help to reduce the weight of EVs and mitigate the road safety impacts of their increased adoption.[81]

THE TAKEAWAY

Profits are fundamentally what the conflict over the path to 100 per cent ZEV sales by 2035 is about. Automakers currently set their prices and allocate their capital towards what makes them the most profit – higher margin, fuel-inefficient SUVs and pickup trucks. Enforcing Canada's ZEV sales targets will secure a more sustainable future but will require a disruption of automakers' profit maximizing sales plans, which do not match a net-zero emission pathway. A Clean Car Standard gives Canada a clear path to significant emissions reductions in the transportation sector in a fair and equitable manner, and should be considered a key part of a broader agenda for a just transition to electric mobility. By relying on a Clean Car Standard to achieve ZEV sales targets, the role of the federal purchase incentive can be shifted in the overall policy mix to instead pursue industrial policy objectives, including auto worker employment, ethical mineral sourcing and greater battery reuse and recycling.

RECOMMENDATIONS

- **Quickly move forward with a strong Clean Car Standard** with a credit system designed based on best practices, including ruling out the use of 'super credits', limiting credits given to PHEVs and enforced with a robust fine of $20,000 for each missing credit, pegged to inflation.

- **Raise the 2026 ZEV sales target to 25 per cent** to align with the International Energy Agency's net-zero scenario and better reflect the accelerated rate of adoption made possible by a Clean Car Standard.

- **Attach requirements to federal ZEV purchase incentives** to ensure that final assembly of eligible vehicles and batteries are done in North America with union labour.

- **Deliver labour market adjustment support for autoworkers** and other workers affected by the transition to a clean economy by expanding access to employment insurance to replace a far greater share of lost income, delivering a guaranteed minimum level of benefits, and providing bridging support to early retirement or re-training, and replacing a far greater share of lost income.

- **Require vehicles which qualify for the federal purchase incentive to certify that the critical minerals sourced for their batteries were extracted responsibly**, ethically and comply with the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), including free, prior and informed consent.

- **Place an income cap on eligibility for the federal ZEV purchase incentive** and instead increase benefits to low-income marginal buyers with funds saved from this measure to improve the cost-effectiveness and equity of the program.

- **Take measures to reduce demand for critical mineral extraction** such as shifting travel demand towards public transit and cycling, requiring improvements in EV battery efficiency and life duration, and reclaiming minerals for re-use through incentivizing battery recycling federally while encouraging regulations provincially.

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