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Submission to Environment and Climate Change Canada

Recommendations in response to: *Canada Gazette, Part I, Volume 156, Number 53: Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations*

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About Environmental Defence Canada

Environmental Defence Canada is a leading Canadian environmental advocacy organization that works with government, industry and individuals to defend clean water, a safe climate and healthy communities.

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.

About David Suzuki Foundation

Founded in 1990, the David Suzuki Foundation (DSF) is a national, bilingual non-profit organization headquartered in Vancouver, with offices in Toronto and Montreal. Through evidence-based research, education and policy analysis, DSF works to conserve and protect the natural environment, and helps create a sustainable Canada.

EXECUTIVE SUMMARY

The objective of the Zero-Emission Vehicle (ZEV) regulation should be to:

- Reduce GHG emissions by accelerating a complete market transformation in the auto sector towards zero-emission vehicles at a pace consistent with a 1.5 °C global heating pathway.
- Increase ZEVs available for sale for Canadian consumers, including in undersupplied regions of the country.
- Use the purchasing power of the Canadian auto market to induce changes in automaker firm behaviour. This means that to meet sales targets, automakers will have to shift their capital allocation and pricing decisions towards the production of competitively priced mass-market ZEVs instead of internal combustion engine (ICE) vehicles.
- Create market certainty for other participants in the auto sector transformation, such as charging infrastructure investors and electric power utilities.

Instead, the regulation proposed by Environment and Climate Change Canada (ECCC):

- Does not significantly reduce greenhouse gas emissions (GHG) emissions before 2030 even if all sales targets are met and threatens to delay compliance as it allows ZEV sales requirements to be deferred until 2029.
- Threatens to create a two-tier supply system where Canadians outside British Columbia (BC) and Quebec wait in line behind consumers in those provinces and Section 177 US States due to higher sales targets.
- Creates compliance options with perverse incentives that are open to gaming and an unregulated ZEV credit trading market.
- Creates significant uncertainty in the pace of ZEV supply, undermining the ability of other market participants to productively plan investments in supportive infrastructure.

Summary of Problems and Proposals

Problem	Proposal
ZEV sales targets are too low	Increase ZEV sales targets to match reference jurisdictions BC, Quebec and California.
Double crediting in BC and Quebec and regional supply inequity	In addition to increasing ZEV sales targets, introduce opt-in credit pool mechanism for federal enforcement of subnational targets at or above federal headline targets that could be utilized by a province, territory or group of subnational jurisdictions.
Unregulated credit trading market	Establishing a publicly managed credit trading desk to provide transparency, regulate transactions and administer a credit clearance mechanism that would require the credit trading market to clear at the end of each year.
Three-year compliance deferral	Create a credit clearance mechanism that ensures that automakers can only carry forward 10% of their annual compliance obligation as credit debt.
Credit generation for investment in charging infrastructure flawed and open to gaming	Replace with a credit clearance mechanism with an option for direct credit sales at a fixed price of \$20,000 pegged to inflation, triggering only in the event of a market-wide credit shortage, with revenues dedicated to charging infrastructure programs (ZEVIP), and helping to set a ZEV credit market price.
Penalty for non-compliance being a criminal sanction, creating uncertainty over enforcement	Keeping the criminal sanction as the legal basis for enforcement, while instituting the above credit clearance mechanism as a compliance pathway, creating clear and predictable financial consequences for missing ZEV sales requirements.

Introduction: The Opportunity

Canada has a historic opportunity to reduce transportation sector carbon emissions at the scale and pace required to meet our climate goals, and halt global heating at 1.5 °C. The transport sector has so far evaded doing its fair share of cutting its emissions. GHG reductions we should have seen from more efficient vehicles have been offset by growth in more driving and the shift towards less-fuel efficient light trucks. We have also faced setbacks due to our regulatory alignment with a climate laggard jurisdiction – such as when Canada was forced to rollback fuel efficiency improvements alongside the Trump administration. This zero-emission vehicle (ZEV) sales regulation is a historic opportunity to deliver on tangible and transformative GHG reductions in the transport sector that Canadians demand – while delivering the market certainty necessary for a broader industrial and market transformation towards zero-emission vehicles.

If designed right, this regulation can make ZEVs more affordable and more accessible to Canadian consumers. By requiring automakers to make the shift and meet ZEV sales targets, they will have to make different decisions about capital allocation and pricing that take people and the planet into account – instead of just their bottom lines. Instead of flooding the market with more profitable gasoline cars and rewarding shareholders with stock buybacks and dividends, they will have to prioritize investments in the development and sale of affordable, mass-market electric vehicles (EVs). Over the long term, this change has the dramatic potential to cut carbon emissions – as predicted by the regulatory impact statement – over 430 million tonnes of carbon. However, due to this regulation only affecting new car sales – and the inherent lag in fleet turnover – the bulk of these emissions reductions will occur in the 2030-2050 time period.

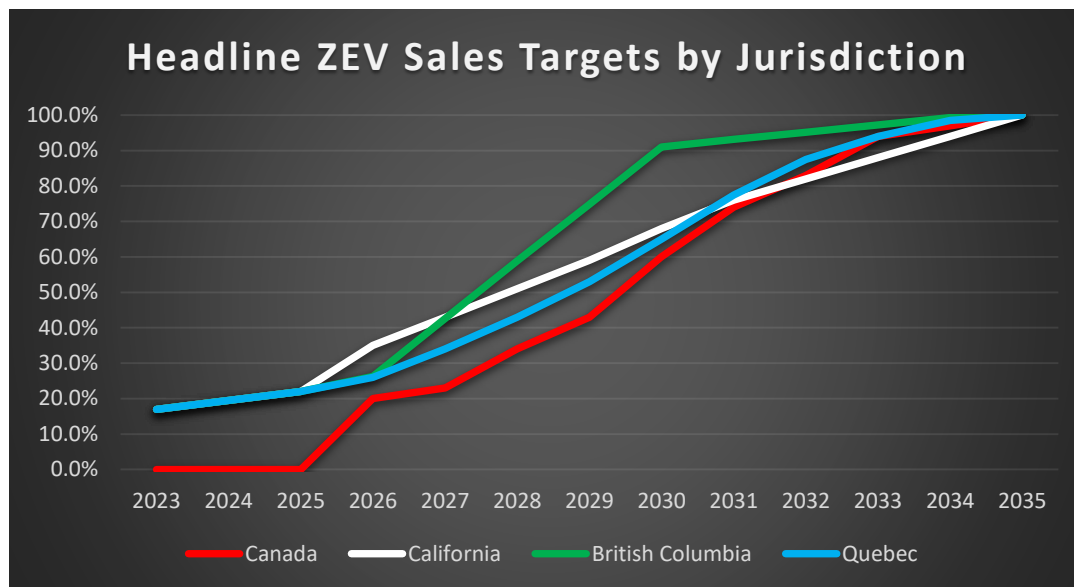
Canada's ability to reach its near-term GHG reduction targets (in the 2030 Emissions Reduction Plan) in the transport sector is at risk, with the most current submission from the Government of Canada to UNFCCC indicating a gap of 8 million tonnes in 2030. It is clear that more needs to be done, including strengthening this regulation, as well as taking additional actions outside the scope of this regulation for deeper GHG reductions, including action on vehicle emissions standards, shifting travel demand to public and active transportation, and reducing vehicle kilometres travelled (VKT) with land use densification and stopping urban sprawl.

In this context, there are several provisions in this draft regulation that would noticeably weaken its stringency and put us even farther from meeting GHG reduction targets. This is especially concerning given that the ZEV sales targets in this draft regulation are noticeably weaker than reference jurisdictions California, British Columbia and Quebec. The most concerning provisions include a total compliance deferral option on a three-year rolling basis, which would mean no penalties for automaker non-compliance until 2029, a lack of a swift predictable financial penalty in line with best practices in reference jurisdictions, and a compliance option where automakers could earn ZEV credits for 'ZEV related activities' that features perverse incentives to inflate costs and invites potential gaming.

Our submission highlights these problems within this proposed draft regulation, as well as outlines proposed solutions to strengthen the regulation to address them. This includes proposing higher sales targets, an opt-in mechanism for greater regional ZEV supply equity, and a Credit Clearance Mechanism which would introduce greater credit market transparency while fixing issues related to the unpredictable penalty, 'ZEV related activities' and rolling compliance deferral all at once.

Problem 1: ZEV sales targets are too low

Canadian ZEV sales targets are below reference jurisdictions British Columbia, Quebec and California, risking Canada's status as a climate leader, and creating a two-tier supply system where Canadian ZEV buyers outside of BC and Quebec wait in line behind people living in more ambitious jurisdictions.



Model Year	ZEV Sales Target: Canada CG1	Paper ZEV Sales Target: California	Real ZEV Sales Target: California ¹	ZEV Sales Target: British Columbia ²	ZEV Sales Target: Quebec ³	Proposed ZEV Sales Target: Canada CG2
2023	0	17%	-	17%	17%	0
2024	0	19.5%	-	19.5%	19.5%	0
2025	0	22%	-	22%	22%	0
2026	20%	35%	27%	26.3%	26%	26%
2027	23%	43%	35%	42.6%	34%	36%
2028	34%	51%	44%	58.9%	43%	48%
2029	43%	59%	53%	74.8%	53%	60%
2030	60%	68%	63%	91%	65%	72%
2031	74%	76%	73%	93.2%	77.5%	84%
2032	83%	82%	80%	95.2%	87.5%	90%
2033	94%	88%	86%	97.2%	94%	95%
2034	97%	94%	92%	99.3%	98.5%	98.5%
2035	100%	100%	98%	100%	100%	100%

¹ ITS UC Davis (2022) researchers indicate that California's real ZEV target is far below its headline ZEV sales target due to significant flexibilities allowed to automakers, in particular early action credits. Despite this, California's effective sales targets are still similar to BC and Quebec trajectories.

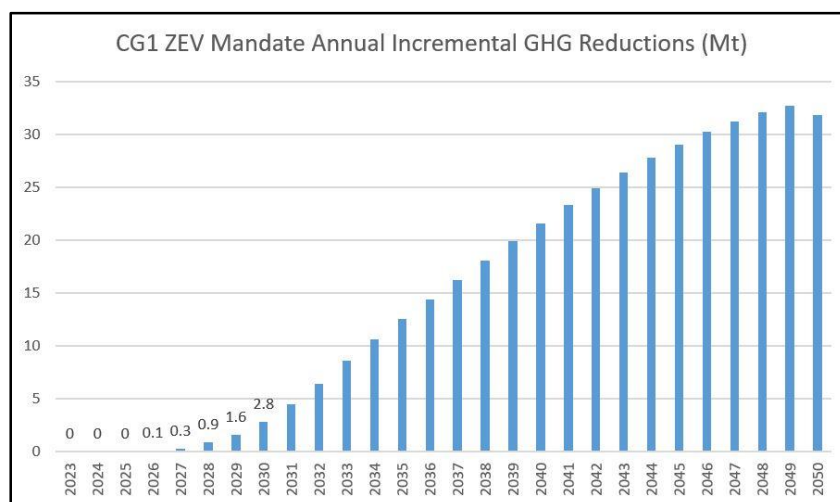
https://escholarship.org/content/qt1g05z2x3/qt1g05z2x3_noSplash_07a2c4c9276a976e9fa21e8337c0e7d8.pdf?t=rcrc9d#page8

² See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/energy-efficiency/zeva_formal_review_intentions_paper_28july2022.pdf

³ See https://www.publicationsduquebec.gouv.qc.ca/fileadmin/gazette/pdf_encrypte/lois_reglements/2022A/105758.pdf

These sales targets below reference jurisdictions, in particular in the years up to and including 2030 have an impact on GHG emissions reduced. According to the regulatory impact statement, we only see an annual incremental impact of 2.8 megatons (Mt) in 2030. The 2030 Emissions Reduction Plan requires a 16 Mt reduction in passenger transport sector emissions, 6 Mt of which is planned to absorb increases in emissions in the aviation and freight transport sectors, for an overall reduction of 10 Mt.⁴

However, current policies, including this one, are projected to only cut overall transport emissions by 2 Mt⁵ – an emissions gap of 8 million tonnes. While this regulation will always have a ‘backloaded’ emissions reduction profile due to it being focused on new car sales rather than the existing on-road fleet, the earlier the new car market can decarbonize, the sooner this can begin to impact the on-road fleet, especially in the absence of any increase in the fleet turnover rate.



The ‘turnover lag’ is a very important factor to consider when setting ICE sale phase-out trajectories.

None of the sales trajectories proposed by more ambitious reference jurisdictions are consistent with a global heating scenario of 1.5 °C, which would require an ICE sale phaseout by 2030 and a reduction of the average lifespan of an on-road vehicle from 12 to 16 years to 10 years.⁶ BC’s targets, which reach 90% sales by 2030, is far closer to the trajectory demanded by a 1.5 °C global heating scenario than other reference jurisdictions, as it reaches a near-total degree of new car fleet decarbonization by the end of the decade, and can begin impacting the on-road fleet far sooner.

8 Electric Vehicle Adoption Dynamics on the Road to Deep Decarbonization

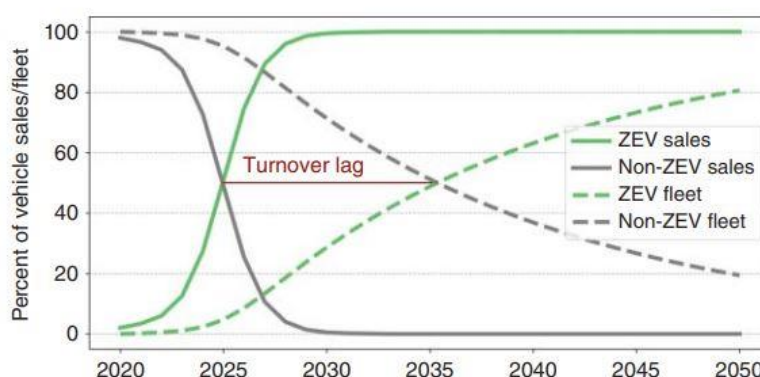


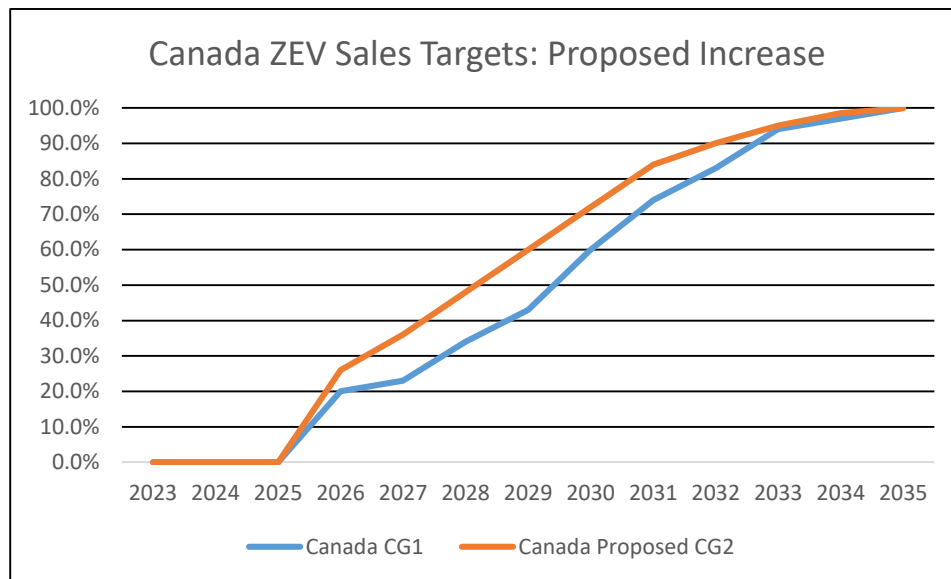
Figure 8.2 Illustrative trajectories for fleet turnover. Assuming a ban on non-ZEV sales in 2030, non-ZEVs are retired from the fleet at their natural assumed rate, and no scrappage policy is assumed. Source: Based on UK Department for Transport 2020.

⁴ See Table 6.7, p.192 of the 2030 Emissions Reduction Plan.

⁵ See Table 5-1, p.251 of Canada’s (2022) Eighth National Communication on Climate Change and Fifth Biennial Report to the UNFCCC. <https://unfccc.int/sites/default/files/resource/Canada%20NC8%20BR5%20EN.pdf>

⁶ Dimanchev, E., D. Qorbani, and M. Korpas (2022). “Electric Vehicle Adoption Dynamics on the Road to Deep Decarbonization”. The 4Ds of Energy Transition. John Wiley & Sons, Ltd, pp. 177–205. doi: 10.1002/9783527831425.ch8.

Canada should at the very least match ZEV sales target trajectories of reference jurisdictions. More specifically, Canada should look very closely at the BC trajectory, which reaches over 90% by 2030, and try to achieve 90% sooner than currently envisioned. **If reference jurisdictions revise their ambitions upwards, Canada should be open to also revising sales targets upwards as well, in particular if actual ZEV supply begins to overshoot targets.**



In addition to strengthening near-term targets, the federal government should take significant ‘avoid’ and ‘shift’ actions to reduce transport sector emissions to compensate for this ‘improve’ lag, including strengthening vehicle emissions standards for gasoline cars sold up to 2035 (see addendum), take aim at emissions from existing on-road vehicles by adopting clear mode shift targets to sustainable modes (transit, walking, cycling), and attaching transit infrastructure investments to land use standards to encourage compact development in order to limit growth in car travel demand.⁷

Problem 2: Two-tier supply system and double crediting in BC and Quebec

National sales targets that are below provincial sales targets will mean a two-tier supply system that does not address regional supply inequity. This is because ZEV sales will be drawn to the jurisdictions with higher targets and fewer effective sales will need to be made outside of BC and Quebec. Furthermore, allowing automakers to earn both a federal and provincial ZEV credit for sales in BC and Quebec will make it more lucrative for automakers with credit surpluses to sell in BC and Quebec (getting 2 “tradable” credits for sales in those jurisdictions). What is even more concerning, because the federal regulation does not regulate credit trading, it may be possible for automakers to trade credits earned under provincial regulations for federal credits and vice versa.

Higher national sales targets would ensure that much of an automaker's compliance obligation would not be able to be met just by complying with existing provincial targets. In combination with this, establishing an opt-in provision would allow a province or a group of provinces to establish a credit pool where they

⁷ See Environmental Defence Backgrounder: Stopping the Public Transit Death Spiral
<https://environmentaldefence.ca/report/stopping-the-public-transit-death-spiral/>

could adopt a subnational target that is at or above the national headline target. This means that automakers would have to meet a sales target within that province or group of provinces and that credit would not be allowed to be traded or carried outside that credit pool.

Opt-in provinces would enter an administrative agreement with the federal government giving Environment and Climate Change Canada (ECCC) permission to enforce subnational targets within provincial jurisdiction to reduce compliance complexity on automakers and administrative burden upon the opt-in province.

Problem 3: Unregulated credit trading market

Similar to an existing provision in the Clean Fuel Regulation,⁸ the federal government should establish a publicly managed credit trading desk, to promote the integrity of the credit market, incentivize regulatory over-compliance, create transparency between market participants and provide accountability to the public. The volume of credits traded, the identities of buyers and sellers, and the price of the traded credit should be public information. Additionally, information regarding how much an automaker is in a credit surplus or deficit should also be public information. This will both foster regulatory transparency as well as inform potential market entrants of lucrative opportunities to generate surplus credits for sale to laggard automakers. Under a regulated credit trading regime, automakers should not be allowed to trade credits between federal and provincial programs, helping to also mitigate the issue of double crediting in BC and Quebec.

Problem 4: 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 3-year settlement period, but these are distinct phased periods where there is a 'wall' for the entire market to settle their credit debts at the end of the 3-year compliance period before moving into the next one. There is no rolling three-year compliance deferral allowed.

California's regime has a similar structure as the federal proposal, but the difference is that California's regime has been around since the 1990s, meaning that in the very crucial years of 2026-2030 where there is a significant ramp up in sales requirements, automakers will still be required to be selling ZEVs in California as they have prior year requirements to settle. Because Canada is starting later and beginning sales requirements in 2026, there are little to no prior year commitments to settle in the crucial early ramp-up period of 2026-2030, and automakers will be able to avoid compliance penalties entirely until 2029.

It is important to remember that automakers have a baked-in profit motive to delay the transition to ZEVs as much as possible. As highlighted by recent economic modelling commissioned by Environmental

⁸ See <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-regulations/regulatory-approach.html#toc28>

Defence and Équiterre,⁹ selling higher-margin gasoline cars for as long as possible is a more lucrative pathway for automaker profits. Furthermore, while profit margins on EVs are lower than gasoline cars, these margins grow over time as automakers are able to take advantage of economies of scale, cost-reducing R&D, and falling battery input prices. That means it will always be more profitable to sell an EV in a future year than an earlier year, and always more profitable to sell a gas car instead of an EV. That means the greater flexibility this regulation gives automakers to delay and defer compliance, the most lucrative option for them will be to take full advantage of it to slow down the transition to ZEVs.

Moreover, because this rule puts no cap on the accumulation of credit debt, there is the danger of ‘political hedging’ behaviour to occur. There is the space for roughly two election cycles to occur before 2029 and credit debts are due. If excess credit debt is allowed to accumulate, this presents the possibility of the lowest-cost option for automakers to defer compliance as much as possible, accumulate credit debt, and convince a future government to forgive or cancel their credit obligations.

As outlined below; this problem could effectively be solved by creating a credit clearance mechanism that ensures that automakers can only carry forward 10% of their annual compliance obligation as credit debt, and allows for direct credit sales as a last-resort compliance option, as is done in BC.

Problem 5: Credit generation for investment in charging infrastructure

We support in principle the idea of telling automakers to ‘put their money where their mouth is’ and introducing incentives to drive private investment in charging infrastructure from the auto sector. However, the manner in which this has been proposed in this regulation creates perverse incentives and is so open to ‘gaming’ that it should be replaced entirely.

For example, the federal government must ensure that automaker investments in charging infrastructure to earn ZEV credits do not stack with either federal or provincial grants from programs such as ZEVIP. Moreover, as currently proposed, credits earned are based on the amount of money spent, rather than the amount of charging infrastructure actually built – this incentivizes automakers to inflate costs simply to earn more credits or create creative payment arrangements with shell companies. Legacy OEMs already spend far greater sums per unit of charging infrastructure than ZEV manufacturers (like Tesla) do. Moreover, since credits can only be earned in 2026, this incentivizes OEMs to actually delay investments in charging infrastructure.

The level of administrative oversight ECCC would have to take on to prevent gaming in this program would be extremely burdensome. It would include scrutinizing the unit prices of dollars for infrastructure built, to stacking oversight for provincial programs or from power utilities, and more. Rather than opening such a large can of worms, it would simply make more sense for this to be replaced with a direct credit sale of \$20,000 (fixed price pegged to inflation) – the revenues of which could go into a program that the federal government has direct oversight over, such as ZEVIP, where gaming will not occur, and investments can be directed towards serving communities most in need first.

The intent of this regulation is to drive supply of ZEVs, rather than fund charging infrastructure – which is a demand-side measure. Instead of bending over backwards to try and shoehorn this into the regulation, Canada should look at other programs that could help drive private investment in charging infrastructure.

⁹ See Clean Car Standard Technical Report: https://environmentaldefence.ca/wp-content/uploads/2022/11/Clean_Car_Standard_Technical_Report_FINAL-ENG-.pdf

One potentially promising avenue would be to explore contracts for differences through the Canada Growth Fund.¹⁰

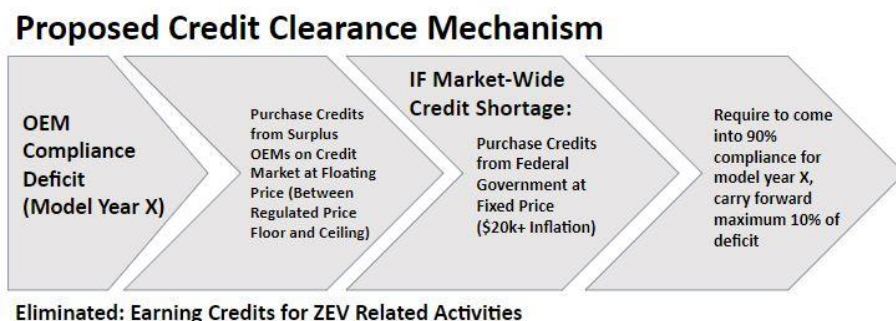
Problem 6: Penalty for non-compliance being a criminal sanction, creating uncertainty over enforcement

A lack of a stringent, swift penalty in the face of regulated sales targets creates significant uncertainty in the repercussions for non-compliance.

With the current approach of a criminal sanction, it is unclear if prosecution would take place for small deficits, how long it would take for the legal system to deal with such a case, or what the final penalty a judge would seek from an automaker. As this enforcement approach does not follow best practice from other jurisdictions, it remains unclear whether this could lead to lack of prosecution for small infractions or long and drawn-out court battles with unclear settlements.

All of this creates unnecessary uncertainty about the pace of ZEV sales, undermining the ability of other market participants to productively plan investments in supportive infrastructure.

Proposal: Establish a Credit Clearance Mechanism



Utilizing the publicly managed credit trading desk, the regulation could introduce a credit clearance mechanism to ensure that at least 90% of an automaker's compliance obligation is met each year. This would limit the accumulation of excess credit debt, and create a clearer and more predictable year-over-year compliance trajectory for greater market certainty.

At the end of each year, automakers in deficit should be required to purchase as many available surplus credits that exist on the credit market to offset their deficit. In turn, automakers with surplus credits should be required to supply the credit market with at least as many credits as is required for the market to clear. Setting a minimum price on traded credits would incentivize market participants to over-comply with the regulation, and setting a maximum price on traded credits (above the government's credit sale fixed price) would prevent price gouging and create more compliance cost certainty for market participants. If there are not enough surplus credits to offset all outstanding deficits, and there is a market-wide credit shortage, the credit clearance mechanism should trigger.

¹⁰ Dimanchev, Emil et. Al (2023) Accelerating Electric Vehicle Charging Investments: A Real Options Approach to Policy Design. MIT CEEPR. <https://ceep.mit.edu/workingpaper/accelerating-electric-vehicle-charging-investments-a-real-options-approach-to-policy-design/>

This clearance mechanism would allow automakers to purchase credits from the federal government at a fixed price of \$20,000 pegged to inflation. Automakers should be required to come into at least 90% compliance for a given model year, and only carry forward a maximum of 10% of a model year's credit deficit as credit debt. All revenues the federal government receives from this clearance mechanism should go towards additional program funding to support the build-out of charging infrastructure, such as the ZEVIP program.

The advantages of this proposal include:

- It would only be employed in the very unlikely scenario of a market-wide credit shortage, and create a 'release valve' in the system that would ensure automakers could always meet their compliance obligations each year. This solves the issue of increased ZEV supply potentially being 'lumpy' due to time delays between investments in new ZEV manufacturing facilities and supply coming online, without giving excess room for total compliance deferral.
- It would prevent the accumulation of excess 'credit debt' from deferred compliance, preventing a 'too big to fail' scenario with multiple automakers in credit default at once, or 'political hedging' opportunities to emerge.
- It would ensure that a lack of compliance means a financial consequence immediately, rather than potentially deferring the penalty for non-compliance by three years.
- It enables the tightening or elimination of other flexibilities featured in the regulation. For example, it provides a clear alternative to the credit generation flexibility of the 'ZEV-related activities' (charging infrastructure investment provision). This mechanism ensures that the \$20,000 price (pegged to inflation) for earning credits by investing in charging is maintained, but instead having a system where it is administratively difficult to prevent gaming, the automaker would simply be paying into a fund managed by the federal government for the explicit purpose of charging infrastructure build out.
- There is legal uncertainty whether the federal government has the legislative authority to enforce fines for non-compliance to this regulation instead of a criminal sanction. Economic modelling and the experience of reference jurisdictions has indicated that a \$20,000 price per credit for non-compliance is sufficient to drive automaker firm behavioural change towards the production and sale of ZEVs, as simply selling a ZEV would be cheaper than paying this price. Effectively, so long as the price for purchasing a credit is fixed at a high enough level, this is not a 'pay to pollute' system. This would allow the federal government to effectively set this as the price for regulatory non-compliance through credit sales rather than a fine while maintaining the criminal sanction as the final, last-resort legal penalty for non-compliance. If the federal government has the legislative authority to issue credits for ZEV related activities, they should have the authority to implement direct credit sales.

Addendum: Interactions With Vehicle Emissions Standards (VES)

Canada has announced that it would work to align emissions standards with the most stringent GHG regulations in North America post-2025, whether at the United States federal or state level. The U.S. EPA also announced its intention to publish strengthened light-duty vehicle GHG emission standards, and is expected to publish a Notice of Proposed Rule Making for post-2026 emission standards in March 2023. According to ECCC's posted draft ZEV sales regulation,¹¹ the Department understands that these upcoming new standards will be the most stringent in North America, and "expects to align with them."

Prevent the Weakening of Vehicle Emissions Standards for Gasoline Cars¹²

Currently, automakers earn CO₂ credits from selling ZEVs under Canada-US harmonized vehicle emission standards (VES). Once a ZEV regulation is introduced, they will also be earning ZEV credits for their battery-electric and plug-in hybrid vehicles. This means that manufacturer fleets would have to meet two targets per year, the ZEV sales target, and the CO₂-based target. Once the ZEV regulation is implemented, regulators will have to decide whether the scope of the CO₂ target remains applied to the whole fleet, or only vehicles with tailpipes (exempting battery-electric vehicles).

If it applies to the whole fleet, emission standards would also have to be ramped up in order to prevent a weakening of emission standards for non-ZEVs as ZEV market share increases and lowers the corporate fleet average. However, this would require aggressive increases in the CO₂ target, a policy factor which Canada largely does not control, as we adopt by reference the American VES written in Washington.

In order to prevent 'backsliding' in terms of the stringency of vehicle emissions standards for gasoline vehicles sold up to 2035, battery-electric vehicles would have to be removed from the scope of vehicle emissions standards regulation, in effect creating a regulatory distinction between vehicles with tailpipes and vehicles without tailpipes. This also underlines the importance of limiting ZEV credits for plug-in hybrid vehicles (which have tailpipes) as they could also potentially earn CO₂ credits in a hybrid arrangement.

VES Interaction and PHEVs Recommendations:

- Limitations and early phase-out of PHEV ZEV credits mitigate potential double-crediting (CO₂ & ZEV Credits) caused by the federal government's proposed treatment of cars with tailpipes as ZEVs. These caps have a hugely significant impact on emissions, particularly in future years.¹³ This is why Environmental Defence, Équiterre and the David Suzuki Foundation were very pleased to see the cap on PHEV credits as a percentage of total compliance in the draft regulation. **However, we recommend a lower initial allowance for this PHEV cap in 2026 and 2027 and a PHEV credit phase-out trajectory consistent with PHEVs as a transitional technology. PHEV credits could**

¹¹ <https://canadagazette.gc.ca/rp-pr/p1/2022/2022-12-31/html/reg1-eng.html>

¹² For a discussion of this issue, please see the following documents from the UK Department of Transport: *Green Paper on a New Road Vehicle CO₂ Emissions Regulatory Framework for the United Kingdom* (pp. 23-30) [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](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)
Technical consultation on zero emission vehicle mandate policy design (pp. 23-24) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1067041/technical-consultation-on-zero-emission-vehicle-mandate-policy-design.pdf

¹³ Arijit Sen, Anh Bui, Josh Miller (2022) Canada's Path to 100% Zero Emission Light Duty Vehicle Sales: Regulatory Options and Greenhouse Gas Impacts. ICCT. <https://theicct.org/publication/can-zev-reg-options-jun22/>

still continue to be credited for sales in Yukon, the Northwest Territories and Nunavut as an exception.

- **Eliminate GHG-ZEV regulatory double crediting for battery-electric vehicles by creating a BEV carve out in GHG emissions standards** (improved fuel economy cannot be met through increased BEV sales). This policy should not be controversial, as the GHG reduction assumptions of the 2030 Emissions Reduction Plan already include this policy change.¹⁴

Addressing the ‘Bigger Car’ Loophole

It is important to address the elephant, or ‘exceedingly large truck’ in the room, as Canada considers adopting the most stringent vehicle emission standards in North America. An important conversation must be had with the jurisdictions we have regulatory alignment with on the growing concern about the shift in the composition of the light-duty vehicle fleet towards larger, heavier and less fuel inefficient vehicles. These vehicles are effectively undoing the gains we might have otherwise experienced with improved fuel economy and are undermining improvements in road safety.

As recently noted by analysts at the International Energy Agency (IEA), transitioning the light-duty vehicle fleet to ZEVs creates far greater pressure on mineral supply chains if the increasingly larger vehicles we drive remain the status quo.¹⁵ This, however, can be mitigated by the policy choices we make now towards downsizing the vehicle fleet and reducing the ‘arms race’ effect of ‘defensive purchasing’ – people simply buying larger cars because they feel safer from other large cars on the road.

North American vehicle emission standards have caused a 32% improvement in fuel economy among carmakers since 2005.¹⁶ Despite these fuel economy improvements, transport emissions have kept rising. One reason for this trend is the ‘bigger car’ loophole in emissions standard regulations. The bigger and heavier the vehicle¹⁷, the less stringent fuel economy regulations are. The heaviest trucks and sport utility vehicles (SUVs) are regulated in an entirely different, less stringent category than passenger cars – called ‘light-duty trucks’. In 2022, cars had to reach a 112gCO₂/km emissions target while trucks only had to meet a 162gCO₂/km emissions target.¹⁸ This creates an incentive for automakers to make bigger and heavier cars.¹⁹

As emissions standards for each vehicle class have gotten progressively more stringent over time, automakers have evaded reducing their emissions by shifting production to larger, heavier vehicles. So while each individual vehicle sold have been getting progressively better fuel economy – the shift in what kinds of vehicles sold have helped cause overall emissions to rise. For example, the US average fuel

¹⁴ 2030 Emissions Reduction Plan p.202 “For the years 2027-2030, annual fuel efficiency improvements of 1.5% per year in gasoline and diesel LDVs. Modelled consistently with the ZEV carve out (i.e. cannot be met through ZEV sales).”

¹⁵ IEA (2023), As their sales continue to rise, SUVs’ global CO₂ emissions are nearing 1 billion tonnes, IEA, Paris <https://www.iea.org/commentaries/as-their-sales-continue-to-rise-suvs-global-co2-emissions-are-nearing-1-billion-tonnes>

¹⁶ EPA (2021) Automotive Trends Report. <https://www.epa.gov/automotive-trends/download-automotive-trends-report#Full%20Report>

¹⁷ This is known as the vehicle ‘footprint’, which is the product of the wheelbase times average track width (the area defined by where the centers of the tires touch the ground). Emissions standards are less stringent within each vehicle class, the larger the footprint. Vehicles above 6000 pounds are considered ‘trucks’, and this regulatory class includes SUVs, vans and pickup trucks.

¹⁸ EPA Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards. Federal Register / Vol. 86, No. 248 / Thursday, December 30, 2021. <https://www.govinfo.gov/content/pkg/FR-2021-12-30/pdf/2021-27854.pdf>

¹⁹ Whitefoot and Skerlos (2011) Design incentives to increase vehicle size created from the U.S. footprint-based fuel economy standards. <https://doi.org/10.1016/j.enpol.2011.10.062>

economy for a sedan is 7.4 (L/100 km) while that of a pickup truck is 12.2 (L/100 km), a difference of 65%. Pickup trucks and SUVs represented 55% of new car sales in Canada in 2010. By 2021, that number has risen to nearly 80% of new car sales.²⁰

While GHG emissions from passenger cars have declined by one third (-33.5%) below 2005 levels, GHG emissions from light trucks have gone up by nearly one third (+29.3%) above 2005²¹ levels.

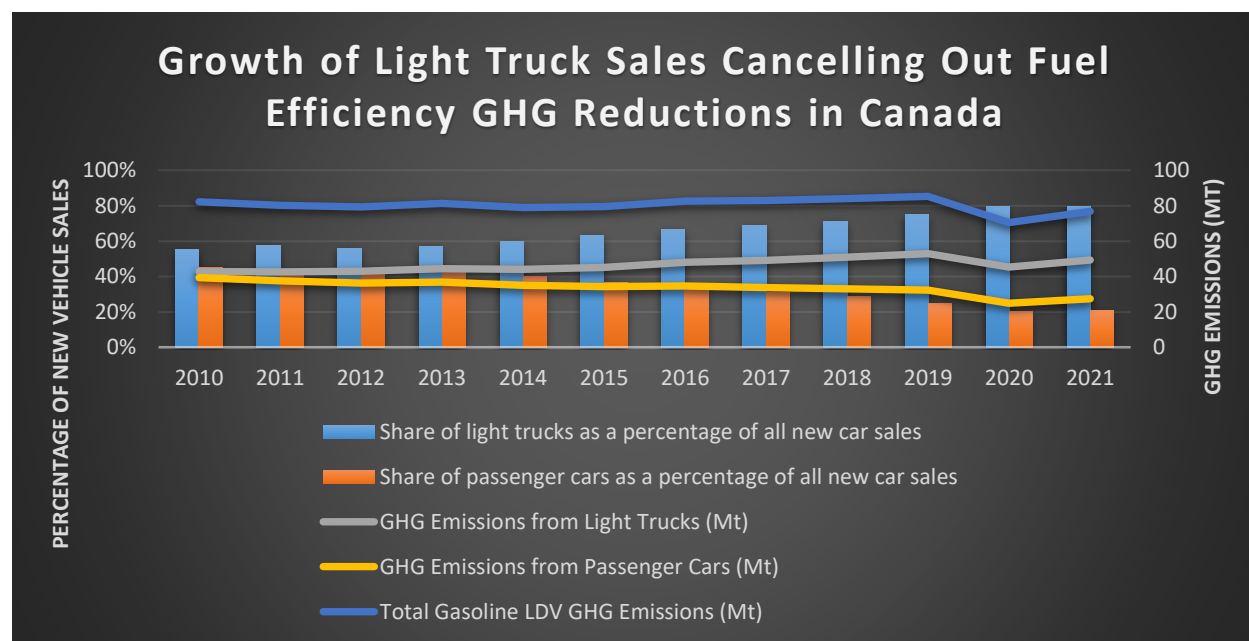


Chart derived from StatCan Table: 20-10-0002-01 and National Inventory Report, GHG Sources and Sinks in Canada. 2021 year estimate provided by Canadian Climate Institute.

Vehicles with larger footprints create more GHG emissions because they weigh more and they are less aerodynamic. One study found that the consequences of the ‘footprint’ standard causing vehicle sizes to increase has created up to 69 million tonnes in additional CO₂ emissions annually – comparable to adding 10 coal-fired power plants to the electricity grid each year.²² Vehicles have been getting heavier, too. In 1975, when fuel economy standards were first introduced in the United States, the weight difference between the heaviest and lightest vehicle types was about 215 pounds, or about 5% of the average new vehicle weight. By 2020, that weight difference has increased to more than 1,600 pounds, or nearly 40% of the average new vehicle weight.

North America’s ‘Big Three’ automakers are among the worst culprits of this trend. Among all major automakers, they have the biggest share of their production devoted to large, heavy vehicles, and as a result, have average new vehicle emissions far higher than their peers, and have helped lead to Canada and the United States to having extremely poor fleet-wide fuel economy compared to our global peers.

²⁰ Statcan (2021) Table: 20-10-0002-01 “New motor vehicle sales, by type of vehicle.”

²¹ Canadian Climate Institute 2021 estimates of GHG Emissions by Economic Sector. <https://440megatonnes.ca/early-estimate-of-national-emissions/>

²² Whitefoot and Skerlos (2011) Design incentives to increase vehicle size created from the U.S. footprint-based fuel economy standards. <https://doi.org/10.1016/j.enpol.2011.10.062>

Automaker (2020)	CO2 Emissions (g/km)	Fuel Economy (L/100km)	Truck Share of Production	ZEV Production Share
GM	240	10.2	67%	1.2%
Ford	240	10.2	73%	0.4%
Stellantis	260	11	85%	0.5%
Industry Average	217	9.3	56%	2.3%

Source: 2021 EPA Automotive Trends Report, Imperial Measurements Converted to Metric²³

G7 Country	Average Fuel Economy (L/100km)	Average Fleet Emissions (gCO2/km)
Canada	8.9	206
United States	8.6	198
Italy	5.2	124
France	5.3	126
United Kingdom	5.8	137
Germany	5.9	140
Japan	6.2	144

Source²⁴

Why Does this Loophole Exist?

When updated fuel economy regulations were finalized in 2012, the Obama administration's rationale for these loopholes was that it did not want to place an undue burden on manufacturers which had a higher share of their production focused on making larger cars – namely the 'big three' North American automakers. In effect, these loopholes for vehicle size and weight are a protectionist tool designed to favour domestic automakers that make larger cars over their competitors, European and Asian manufacturers, who make smaller cars.²⁵ These rules have also been letting big vehicle manufacturers off the hook by increasing the stringency of car emissions standards at a much faster rate than light truck emissions standards, widening the gap between both regulatory classes. This is something that Asian and European manufacturers complained about when laxer stringency schedules for light trucks were announced by the Obama administration.

"The proposal encourages manufacturers and customers to shift toward larger, less efficient vehicles, defeating the goal of reduced greenhouse-gas emissions."

- Tony Cervone, a Volkswagen spokesperson told Bloomberg in 2011.²⁶

²³ Note that while this data covers vehicles sold in the United States, it is broadly applicable to cars made in Canada as 76% of Canadian production is exported and 93% of automotive sector exports (NAICS, 3361, 3362, 3363) go to the United States.

²⁴ 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>

²⁵ Kiso, T. Evaluating New Policy Instruments of the Corporate Average Fuel Economy Standards: Footprint, Credit Transferring, and Credit Trading. Environ Resource Econ 72, 445–476 (2019). <https://doi.org/10.1007/s10640-017-0200-1>

²⁶ Bloomberg (2011) Automakers Agree to 54.5 MPG Fuel-Economy Rule, Obama Says. <https://www.bloomberg.com/news/articles/2011-07-29/automakers-agree-to-54-5-mpg-u-s-fuel-economy-rule-obama-says#xj4y7vzkg>

The other rationale given by the Obama administration for these rules at the time is that it is specifically designed to prevent the fleet downsizing which would occur if all vehicles were on a level playing field, because they argued that this would reduce road safety.²⁷ The logic is clear, but very flawed. Previous research on this topic often focuses on the safety benefits of being in a larger vehicle when in a collision with another car²⁸ – ignoring the impacts that larger cars have on other road users like pedestrians and cyclists, and the fact that larger cars are more likely to get into accidents due to factors like larger blind spots. In fact, the trend towards larger and heavier vehicles has had significant negative effects on road safety and there is no safety justification for having weaker emissions standards for larger and heavier vehicles.

The Bigger Car Arms Race

Many consumers buy larger vehicles like SUVs and trucks, even at a price premium - because they feel safer in them.²⁹ Its hard to blame them – when they are feeling intimidated by the presence of a greater share of other larger vehicles on the road. While larger vehicles are better at protecting their own internal occupants in the event of a crash, these larger vehicles are unfortunately more likely to kill other road users that are involved in collisions with them. One study on the subject found that each crash involving fatalities of light-truck or SUV occupants that is prevented comes at a cost of at least 4.3 additional crashes that involve deaths of car occupants, pedestrians, bicyclists, or motorcyclists.³⁰ Another study found that a 1% increase in light truck fleet share raises annual traffic fatalities by 0.34%. Of this increase, approximately one fifth accrue to the light trucks' own occupants, and the remaining four fifths accrue to the occupants of other vehicles and pedestrians.³¹

It's not hard to see why larger vehicles are a menace to other road users, and pose a particular danger to pedestrians and cyclists. Given the higher bumpers and blunter frontal profiles of trucks and SUVs, pedestrians struck by one of these vehicles are much more likely to incur a serious head or chest injury, which makes them 2-3 times more likely to die than if they were struck by a car.³² The heavier the vehicle – the more likely it is to kill you, with each 1,000 pounds in extra vehicle weight generating a 40-50% increase in fatality risk.³³ In fact, the drivers of larger vehicles' perception of their own safety may actually be making these problems worse – as emerging evidence suggests that feeling safer while driving a larger vehicle is linked to more aggressive and risky driving behaviour.³⁴ This may be one factor that helps to

²⁷ EPA, NHTSA (2012) Joint Technical Support Document: Final Rulemaking for 2017-2025 Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Chapter 2, Page 11.

²⁸ White, M. J. (2004). The "Arms Race" on American Roads: The Effect of Sport Utility Vehicles and Pickup Trucks on Traffic Safety. *The Journal of Law & Economics*, 47(2), 333–355. <https://doi.org/10.1086/422979>

²⁹ Aksen, Long, Wolinetz (2022) Willing to Downsize? Understanding Consumer Demand for SUVs in Metro Vancouver. <https://davidssuzuki.org/science-learning-centre-article/willing-to-downsize-understanding-consumer-demand-for-suvs-in-metro-vancouver/>

³⁰ Ibid.

³¹ Michael Anderson, Safety for whom? The effects of light trucks on traffic fatalities, *Journal of Health Economics*, Volume 27, Issue 4, 2008, <https://doi.org/10.1016/j.jhealeco.2008.02.001>.

³² Lefler, D. E., & Gabler, H. C. (2004). The fatality and injury risk of light truck impacts with pedestrians in the United States. *Accident Analysis & Prevention*, 36(2), 295–304. doi:10.1016/s0001-4575(03)00007-1

³³ Michael L. Anderson, Maximilian Auffhammer, Pounds That Kill: The External Costs of Vehicle Weight, *The Review of Economic Studies*, Volume 81, Issue 2, April 2014, Pages 535–571, <https://doi.org/10.1093/restud/rdt035>

³⁴ Claus, B., Warlop, L. The Car Cushion Hypothesis: Bigger Cars Lead to More Risk Taking—Evidence from Behavioural Data. *J Consum Policy* 45, 331–342 (2022). <https://doi.org/10.1007/s10603-022-09511-w>

explain why trucks and SUVs are more likely to crash than cars are, effectively neutralizing any safety benefits given to their occupants by their larger size.³⁵

The significant frontal hood space from these large SUVs and trucks also create ‘blind zones’ directly in front of the vehicle, with a particular danger posed by not being able to see small children sitting in a driveway. One NBC investigation lined up nine children in front of an SUV, and it was only when they added the 10th child that the driver could see the potential danger of running them over – a 16-foot blind zone.³⁶

“The front end was always the focal point. The rest of the truck is supporting what the rest of the truck is communicating... we spent a lot of time making sure that when you stand in front of this thing it looks like it’s going to come get you. It’s got that pissed-off feel, but not in a boyish way, still looking mature. It just had to have that imposing look.”

- Karan Moorjani, the man who designed General Motors’ Sierra HD told the publication Muscle Cars & Trucks, explaining that it was a priority to make sure that the vehicle looked as imposing as physically possible³⁷

The significant differences in road safety between North American countries and European countries can be partially explained by the heavier vehicles dominating our roads. In Canada, between 2010 and 2018, despite the number of road deaths decreasing by 20% for car occupants, it increased by 5.6% for pedestrians.³⁸ Over that same 8-year period, per-km fatality rates in the United States rose by 17% for pedestrians and 33% for cyclists. In 2018, pedestrian fatality rates per km in the USA were 5–10 times higher, and cyclist fatality rates per km were 4-7 times higher than the UK, Germany, Denmark and the Netherlands.³⁹

We should not ignore how these trends impact disadvantaged members of society. Vehicle collisions involving pickup trucks and SUVs are far more likely to kill instead of injure pedestrians and cyclists, and victims involved in these collisions are disproportionately racialized.⁴⁰ These disparities also emerge when looking at socioeconomic class – a pedestrian in the poorest neighbourhoods of the Island of Montreal is 6.3 times more likely to be injured by a vehicle at an intersection than a pedestrian in the most affluent neighbourhood.⁴¹ Studies have also indicated that drivers are less likely to yield to black pedestrians than

³⁵ Gayer, T. The Fatality Risks of Sport-Utility Vehicles, Vans, and Pickups Relative to Cars. *Journal of Risk and Uncertainty* 28, 103–133 (2004). <https://doi.org/10.1023/B:RISK.0000016139.79886.3e>

³⁶ NBC Washington (2022) Driveway Danger: Kids Being Injured and Killed in ‘Frontover’ SUV Blind Zone Incidents. <https://www.nbcwashington.com/investigations/driveway-danger-kids-being-injured-and-killed-in-frontover-suv-blind-zone-incidents/3119237/>

³⁷ Manoli Katakis (2019) 2020 GMC SIERRA HD DESIGN: THE ORIGIN STORY. Muscle Cars & Trucks. <https://www.musclecarsandtrucks.com/2020-gmc-sierra-hd-design-the-origin-story/>

³⁸ International Transport Forum (2020) Road Safety: Canada. OECD. <https://www.itf-oecd.org/sites/default/files/canada-road-safety.pdf>

³⁹ Ralph Buehler & John Pucher (2021) The growing gap in pedestrian and cyclist fatality rates between the United States and the United Kingdom, Germany, Denmark, and the Netherlands, 1990–2018, *Transport Reviews*, 41:1, 48-72, DOI: 10.1080/01441647.2020.1823521

⁴⁰ Mickey Edwards, Daniel Leonard, (2022) Effects of large vehicles on pedestrian and pedal-cyclist injury severity, *Journal of Safety Research*, <https://doi.org/10.1016/j.jsr.2022.06.005>.

⁴¹ Morency P, Gauvin L, Plante C, Fournier M, Morency C. Neighborhood social inequalities in road traffic injuries: the influence of traffic volume and road design. *Am J Public Health*. 2012 Jun;102(6):1112-9. doi: 10.2105/AJPH.2011.300528

they are to white pedestrians trying to cross a street⁴² and the odds of a driver yielding to a pedestrian decrease with affluence – specifically by 3% for each \$1000 increase in the value of the car they are driving.^{43,44}

Subsidizing Bigger Vehicles

Car companies can respond to increased fuel economy standards in a few ways – one is to invest in fuel-saving technology and design (like including a high-efficiency alternator or more aerodynamic exterior), which generally increases the purchase price of the vehicle, or they can lower performance. For example, a 10% reduction in fuel consumption can be achieved in many vehicles without increasing production costs by reducing 0-60mph acceleration performance by 1 second or less.⁴⁵

The increased fuel economy stringency nevertheless increases the purchase price of new vehicles, and this is actually measured by the National Highway Traffic Safety Administration (NHTSA). For example, when the US Department of Transportation (USDOT) announced increased fuel economy standards for model years 2024-2026, they estimated that this would increase the purchase price of a car by \$701 (USD) in 2024, rising to \$1265 (USD) in 2026 and the purchase price of a light truck by \$386 (USD) in 2024 rising to \$1,167 (USD) in by 2026.⁴⁶ Even though these regulations increase the purchase price of new vehicles, consumers always end up better off because the fuel savings from improved fuel economy always mean they come out ahead.

The problem is that since light trucks face a lower regulatory burden than cars, this creates an implicit price subsidy for larger vehicles compared to a counterfactual scenario where emissions from both vehicle classes were regulated the same. In other words, fuel economy standards are increasing the price of a more fuel-efficient car far more than they are increasing the price of a less fuel-efficient light truck. The danger is that this difference in price increases could be leading to more consumers purchasing light trucks than they otherwise would have if that vehicle class was subject to the same fuel economy standards as a car. These price differentials matter – as car consumers are ‘myopic’ and consistently undervalue fuel economy when making vehicle purchase decisions.⁴⁷ One US study suggests that a \$100 increase in the cost of light trucks relative to cars would create significant changes in the composition of the passenger-vehicle fleet – with more than five million light trucks being replaced by cars.⁴⁸

⁴² Tara Goddard, Kimberly Barsamian Kahn, Arlie Adkins. Racial bias in driver yielding behavior at crosswalks, Transportation Research Part F: Traffic Psychology and Behaviour, Volume 33, 2015, <https://doi.org/10.1016/j.trf.2015.06.002>.

⁴³ Coughenour C, Abelar J, Pharr J, Lung-Chang C, Singh A. Estimated car cost as a predictor of driver yielding behaviors for pedestrians. J Transp Health. 2020 Mar;16:100831. doi: 10.1016/j.jth.2020.100831.

⁴⁴ For details on Canada’s trend towards ever larger vehicles, its causes and its consequences, read Équiterre’s study on the topic: <https://www.equiterre.org/en/initiatives/understanding-the-rise-of-light-duty-trucks-in-canada>

⁴⁵ Whitefoot, Kate & Fowlie, Meredith & Skerlos, Steven. (2011). Product Design Response to Industrial Policy: Evaluating Fuel Economy Standards Using an Engineering Model of Endogenous Product Design. <https://haas.berkeley.edu/wp-content/uploads/WP214.pdf>

⁴⁶ NHTSA (2022) Corporate Average Fuel Economy Standards for Model Years 2024-2026 Passenger Cars and Light Trucks (p. 939-940) https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-04/Final-Rule-Preamble_CAFE-MY-2024-2026.pdf

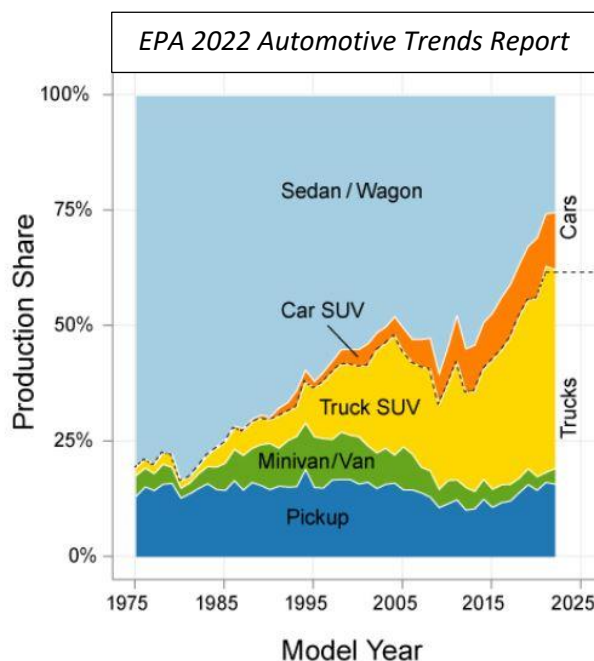
⁴⁷ Kenneth Gillingham, Sébastien Houde, and Arthur van Benthem (2019) Consumer Myopia in Vehicle Purchases: Evidence from a Natural Experiment. NBER Working Paper No. 25845. https://www.nber.org/system/files/working_papers/w25845/w25845.pdf

⁴⁸ Nicholas Brozović, Amy Whritenour Ando (2009) Defensive purchasing, the safety (dis)advantage of light trucks, and motor-vehicle policy effectiveness, Transportation Research Part B: Methodological, Volume 43, Issue 5 <https://doi.org/10.1016/j.trb.2008.09.002>.

'Bigger Car Loophole' Recommendation:

Canada should consider the benefits and drawbacks of American regulatory policy design, and be open to bilateral discussions with the US federal government about joint reform, instead of blindly adopting policy written in Washington that favours the interests of American car companies.

As Canada considers adopting US light-duty vehicle emissions regulations, there should be a strong emphasis on the need to review its regulatory vehicle classes, because when they were developed in the 1970s the modern SUV did not exist. Today, the fuel-efficient sedan and small car is an endangered species as automakers have pivoted production to vehicles with weaker fuel economy standards. This happened because regulators allowed them, and designed vehicle emission standards to encourage it. The road safety justification for this policy choice does not hold up to scrutiny, and exists as cover for the real policy objective – protectionist regulatory design favouring American OEMs over European and Asian competitors, at the expense of emissions reduction.



Canada should move to reduce and eliminate the implicit regulatory price subsidy for light trucks.

Moreover, if Canada cannot move aligned regulatory jurisdictions to reduce or eliminate the implicit regulatory subsidy for light trucks compared to cars, Canada should examine compensating for it through fiscal measures such as expanding and broadening the 'green levy' on fuel-inefficient vehicles at a proportionate amount to the implicit regulatory price subsidy.

These gas guzzlers make up 80% of new car sales today – something that can't be said of ZEVs in this draft regulation until 2032. In light of meagre near-term GHG reductions from low ZEV sales targets and the fleet turnover lag, it is incredibly important to address the large truck in the room as Canada considers next steps on post 2026 tailpipe emission standards.