Environment and Climate Change Canada
Environnement et Changement climatique Canada

FINAL DECISION DOCUMENT

on the Mid-Term Evaluation of the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations

Canada

Final Decision Document on the Mid-Term Evaluation of the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations.

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Executive summary

The Government of Canada has pledged to exceed its Nationally Determined Commitment under the Paris Agreement to reduce national greenhouse gas emissions by 30% below 2005 levels by 2030, and achieve net-zero emissions by 2050.

The *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* (regulations) establish progressively more stringent greenhouse gas (GHG) emission standards for new on-road light-duty vehicles manufactured, or imported into Canada for the purpose of sale. The initial regulations took effect with model year 2011. The regulations were amended in October 2014 (*Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations)* to establish GHG standards for the 2017 to 2025 model years. Since 2011, the regulations have resulted in the GHG emissions from new passenger automobiles being reduced by 19.2% and from light trucks by 15.5%.

This document presents the findings of the mid-term evaluation that the Government committed to conduct in the Regulatory Impact Analysis Statement that accompanied the publication of amendment to the *Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* in October 2014.

Canada's emission standards for on-road light-duty vehicles have historically been aligned with U.S. standards to optimize benefits to Canadian consumers and the environment at the lowest cost, while ensuring a level playing field for auto manufacturers in both countries.

The U.S. Environmental Protection Agency conducted an evaluation of their regulations in 2016 and reversed its conclusions, in 2018, determining that the standards were too stringent. A U.S. Final Rule published in April 2020 reduced the annual increase in stringency from approximately 5% to approximately 1.5% for the 2021 through 2026 model years.

The incorporation by reference of U.S. standards in the Canadian regulations resulted in the immediate roll back of the stringency of the standards in Canada. The Government of Canada modified the scope of its Mid-term Evaluation to include technical and policy considerations of the impacts of the U.S. Final Rule.

Environment and Climate Change Canada (the department) considered a variety of factors as part of the evaluation, including:

- past and ongoing U.S. actions to address GHG emissions from light-duty vehicles
- a high-level cost-benefit analysis of more stringent standards than those in the U.S. Safer Affordable Fuel Efficient (SAFE) Vehicles standard (known as the U.S. Final Rule)
- potential impacts of the U.S. Final Rule on competitiveness in the Canadian automotive industry, and on vehicle safety
- what changes might be required to implement certain flexibility provisions the department considered as part of the evaluation.

The department formally consulted twice with regulated companies, non-governmental

organizations (NGOs), subnational governments, members of the public and other relevant federal departments as part of its evaluation. The first time was in 2018 to get feedback on what should be considered in Canada's mid-term evaluation. The second time was late summer 2020 following the release of the U.S. Final Rule.

A detailed summary of these comments and the department's response is provided in section 4.

Most regulated companies advocated maintaining alignment with U.S. standards and the flexibility provisions, with some expressing more nuanced positions on certain provisions. Most NGOs and other levels of government felt that Canada should develop more stringent standards, and expressed a variety of views on the various flexibility provisions.

Transport Canada noted that U.S. vehicle emission standards are not expected to diminish the level of safety set by Canadian federal safety standards for light-duty vehicles. Innovation, Science and Economic Development Canada noted that alignment of the Canadian and U.S. standards is one factor (along with trade agreements, labour rates, energy costs, taxes and logistics) that affects the competitiveness of the Canadian auto sector within an integrated North American auto market, and misalignment could have potential impacts in Canada such as increasing the cost of vehicle manufacturing in Canada.

Conclusions and next steps

Based on consultation feedback and departmental evaluation, the department has determined the current standards that increase in stringency by 1.5% per year for the 2021 through 2025 model years are achievable but not rigorous enough to allow Canada to meet its emissions reduction objectives.

The department's analysis concluded that if Canada were to have in place the previous increased stringency target of 5% a year until 2025, a substantial change would have to occur in the fleet mix coming from manufacturers in Canada. However, if standards increasing in stringency by about 5% were re-introduced beginning with the 2023 model, Canada would be projected to see net benefits exceeding costs by a ratio of almost 2:1. This analysis assumed that companies would comply with more stringent standards by increasing the sales of zero-emissions and decreasing sales of conventional vehicles. The department believes this is a conservative estimated ratio of benefits to costs, because zero-emission vehicles are a high-cost technology and some manufacturers could be expected to deploy more cost effective technologies to reduce emissions.

The U.S. is expected to begin reviewing their current standards in support of establishing ambitious, job-creating fuel economy standards as outlined in the Executive Order signed by President Biden on January 20, 2021. The department will seek to collaborate with the U.S. when developing new standards for the 2023-25 model years. This path forward would work towards supporting actions outlined in Canada's strengthened climate plan, *A Healthy Environment and a Healthy Economy*. Canada's recently announced climate plan, which committed Canada to align its emission standards with the most stringent standards at the U.S. federal or state level for the post-2025 time period.

Finally, there are several modifications to flexibility provisions in the US Rule that the department is considering incorporating in the Canadian regulations:

- amendments will be proposed to the regulations to remove any requirements to account for upstream emissions (emissions associated with production and distribution) from electric vehicles (see Section 3.7.4);
- no new amendments will be proposed related to a new multiplier for natural gas vehicles (see Section 3.7.2);
- special credit provisions for certain hybrid and low-emitting pickup trucks will be allowed to expire at the end of the 2021 model year (see Section 3.7.3); and
- future regulatory amendments will develop appropriate standards for small volume companies (see Section 3.7.5)

As part of the regulatory amendment process, a new round of stakeholder consultations will take place now that the mid-term evaluation has concluded. The department will also consider the use of an interim order if it is determined that changes to certain regulatory provisions are needed before final regulatory amendments can be published.

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1. Introduction

Environment and Climate Change Canada (the department) published the *Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* in October 2014. In the *Regulatory Impact Analysis Statement* (RIAS) which accompanied the amendments to the regulations, the department committed to conducting a mid-term evaluation to determine if the U.S. mid-term review had any impact on Canada's Regulations. This included consultation with stakeholders, provinces, territories and industry, and a review of the costs and benefits in Canada resulting from any new requirements coming out of the U.S. review. Canada's emission standards for on-road light-duty vehicles have historically been aligned with U.S. standards, since it provides significant environmental and economic benefits to Canada by minimizing costs to industry and consumers and ensuring a level playing field for auto manufacturers in both countries.

This document follows the earlier publication in 2018 of the *Discussion paper on the mid-term evaluation of the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations*. The purpose of that paper was to seek early views on factors to be considered when assessing the appropriateness of the Canadian requirements. In March 2019, the department published a summary and response to the comments that were received following the publication of that paper.

A consistent message from stakeholders during these preliminary consultations was that the department should wait to conclude its mid-term evaluation until after the U.S. had released any new Final Rule modifying the stringency of U.S. standards, as changes to the U.S. standards would directly impact the stringency and feasibility of Canadian standards. The department initiated further consultations on the Canadian mid-term evaluation following the release of Part 2 The Safer Affordable Fuel-Efficient Vehicles Rule (Final Rule) by the U.S. Government in April of 2020.

This document concludes and the mid-term evaluation in Canada and provides the key information that informed the department's decisions Including developments in the U.S., high level estimates of projected costs and benefits of potential changes to Canada's regulations, the competitiveness of the Canadian auto industry within an integrated North American market and data and comments provided by stakeholders.

1.1 Overview of Canada's light-duty vehicle GHG emissions regulations

The transportation sector is a significant source of greenhouse gas (GHG) emissions, contributing approximately 25% of Canada's total emissions in 2018. Reducing emissions from new cars and light-duty trucks is an essential element of the Government's strategy to reduce air pollutants and GHG emissions to protect the environment and the health of Canadians.

The regulations establish progressively more stringent GHG emission standards over the 2011 to 2025 model years for both passenger automobiles and light trucks. Importers and manufacturers of new vehicles are required to meet fleet average GHG emission standards that are performance based. The applicable emission standards are specific for each company and are a function of the footprint and quantity of vehicles sold by that company in a given model year.

Companies are required to submit annual compliance reports, from which a company's applicable standards and performance are calculated. These annual reports express performance in grams of carbon dioxide (CO_2) equivalent emitted per mile driven based on standardized vehicle emissions tests. The emissions measured during testing include CO_2 and other carbon-related combustion products, namely carbon monoxide (CO) and hydrocarbons (HC), collectively referred to as the vehicle's carbon-related exhaust emissions. The regulations also establish emissions standards for the release of other secondary greenhouse gases such as methane (CH_4) and nitrous oxide (N_2O).

There are mechanisms in the regulations which provide companies with options and flexibilities to achieve compliance with the applicable GHG emission standards in a cost-effective way, such as recognizing the benefit of technologies which reduce emissions in ways that are not captured during standard emissions testing. The regulations also contain flexibilities which incentivize the deployment of advanced technologies such as plug-in hybrid and battery electric vehicles. The regulations are based on an emission credit system that allows companies to generate credits if their GHG emissions performance is better than their applicable GHG emissions standard. Conversely, companies generate a deficit if their fleet average performance is worse than their applicable standards. Credits can be used to offset deficits or traded to other companies and any deficit must be offset within 3 years.

The 2014 amendments to the regulations established emissions standards for the 2017 to 2025 and later model years. The standards for these model years are aligned with those of the U.S. Environmental Protection Agency (EPA) through incorporation by reference. Canada's emission standards for on-road light-duty vehicles have historically been aligned with those of the U.S. EPA as alignment with U.S. standards provides significant environmental and economic benefits to Canada while minimizing costs to industry and consumers and ensuring a level playing field for auto manufacturers in both countries.

The U.S. EPA conducted its own mid-term evaluation and on April 2, 2018, made a final determination that the standards set for model years 2022 to 2025 were not appropriate and new, less stringent standards should be developed. In the spring of 2020, the U.S. published the amendments to U.S. federal GHG emission standards for light-duty vehicles and reduced the annual increase in stringency from approximately 5% to approximately 1.5% for the 2021 through 2026 model years.

The incorporation by reference of U.S. standards into Canada's regulations means that these new, less stringent standards also apply in Canada unless the Regulations are amended.

1.2 Canada's commitment to decarbonisation of light-duty vehicle sector

Canada has pledged to exceed its commitment under the Paris Agreement to reduce national GHG emissions by 30% below 2005 levels by 2030 and reach net-zero emissions by 2050. The Government's efforts to put Canada on a path to meeting these commitments are being pursued through the implementation of the Pan-Canadian Framework on Clean Growth and Climate Change. Implementing increasingly more stringent emission standards throughout the economy is one component of the Government's plans to meet these commitments.

In *A Healthy Environment and a Healthy Economy*, the government committed to further

actions to reduce emissions from light-duty vehicles in Canada including:

- work to align Canada's light-duty vehicle regulations with the most stringent performance standards in North America post-2025
- engaging the new U.S. Administration on approaches to increase the consumer availability of zero-emission vehicles in both countries
- working with partners on supply-side policy options to achieve additional reductions from Canada's light-duty fleet and expand the consumer availability of zero-emission vehicles in Canada as demand grows

1.3 Past consultations and comments received

The consultation process for the mid-term evaluation began with the publication of a discussion paper in 2018. During public consultations, key policy considerations were highlighted, such as Canada's Paris commitments, the integrated nature of the North American vehicle market, fuel prices in Canada and efforts on the parts of both the federal and provincial governments to increase the number of zero-emission vehicles on the road.

The discussion paper posed the following questions:

1. What levels of vehicle technology costs and payback timelines are reasonable for compliance with the existing 2022 to 2025 standards?
2. Are there any impediments to meeting the estimated levels of electrification (plug-in vehicles) from the 2014 Regulatory Impact Analysis Statement?
3. What level of electrification (plug-in vehicles) and hybrid powertrains would be needed to achieve compliance with the existing 2022 to 2025 standards?
4. Is the projected GHG emission reduction contribution of the light-duty vehicle sector towards meeting the government's emission reduction goals reasonable?
5. Would compliance with the existing standards for the 2022 to 2025 model years be achievable while maintaining the competitiveness of the Canadian auto industry considering the integrated nature of vehicle manufacturing and trade in the North American market?
6. Would the existing standards for the 2022 to 2025 model years provide benefits to consumers and to the public?
7. Are there any safety related considerations that should be taken into account?
8. Are there changes to existing flexibilities or other new flexibilities that should be considered to facilitate compliance with existing standards while minimizing impacts on expected GHG emission reductions?
9. Are there any emerging trends such as car sharing that need to be taken into account as part of the mid-term evaluation?
10. Are there any other factors affecting the light-duty vehicle market that the department should consider as part of the mid-term evaluation?
11. Are there any other factors that the department should take into account in considering the outcome of the U.S. mid-term evaluation and the appropriateness of the existing 2022 to 2025 model year standards in Canada?

The department received approximately 230 submissions from a broad range of interested parties in response to the discussion paper, including 16 from the automotive industry, 12 from NGOs, 5 from the other levels of government, and almost 200 from members of the public. A summary of the comments received was published in 2019. Many stakeholders advocated for the department to wait for the U.S. rulemaking process to be completed

before finalizing Canada's mid-term evaluation. Most regulated companies and their associations stated that Canada should maintain standards in alignment with those of the U.S. EPA. Many NGOs and other levels of governments advocated for maintaining the stringency of Canada's standards (5% annual increases in stringency), with some advocating for even more stringent standards. The overall general consensus was that stringency of the standards to be maintained or increased further.

1.4 Consultations following the publication of the 2020 final rule in the U.S.

Following the publication by the U.S. EPA of Part 2 of the Final Rule in April of 2020, the department commenced a second round of consultations with stakeholders in August and September of 2020. These consultation sessions were held entirely virtually, in line with public health guidelines. They included a general consultation session open to all stakeholders, more targeted consultation sessions with regulated companies, other levels of government, NGOs and members of the public, and numerous bilateral meetings. All stakeholders were required to provide written comments by September 30th.

The department received written comments including 12 from regulated companies and their associations, 6 from NGOs, 4 from other industry stakeholders, 1 from a province, and 2 from members of the public.

2. GHG emission and fuel economy standards for light-duty vehicles in the U.S.

Canada's GHG emission standards for light-duty vehicles are aligned with those of the U.S. EPA.

2.1 U.S. context

Greenhouse gas emission and fuel economy requirements for light-duty vehicles in the United States are prescribed by 3 separate government entities, including 2 at the federal level and 1 at the state level.

The National Highway Traffic and Safety Administration (NHTSA) prescribes national fuel economy standards. In 1975, through the Environmental Policy and Conservation Act, Congress directed NHTSA to develop corporate average fuel economy standards. The U.S. EPA published standards for GHG emissions from light-duty vehicles in 2010, following a ruling in the U.S. Supreme Court (*Massachusetts v. EPA* in 2007) and a determination in 2009 that GHG emissions from light-duty vehicles constituted a threat to public health. These standards first applied to vehicles of the 2012 model year.

The State of California is uniquely empowered under the Clean Air Act to set pollution standards for light-duty vehicles, provided that these standards are at least as stringent as U.S. federal standards and that the Administrator of the U.S. EPA grants California a waiver to enforce those standards. Other states can also voluntarily adopt California's standards in

place of the federal standards under Section 177 of the Clean Air Act. Sixteen other states[1] have adopted or announced intentions to adopt some or all of California's emission standards for light-duty vehicles.

Over the years, California has received various waivers from the U.S. federal government allowing it to enforce its own light-duty vehicle emission standards. However, the most recent waiver was revoked by the Administrator of the U.S. EPA in the fall of 2019.

2.2 U.S. federal government

U.S. emission standards have continued to evolve and become progressively more stringent over time.

2.2.1 U.S. regulatory timeline

Automakers reached an agreement with U.S. EPA, NHTSA and California in 2011 to adopt "One National Program" of vehicle efficiency standards, where U.S. EPA and California would create a single shared GHG standard and NHTSA would adopt a corresponding harmonized fuel economy standard. The 2 agencies published those standards in 2012 for vehicles of the 2017 to 2025 model years, setting annual increases in the stringency of the standards of about 5% per year for most classes of vehicles in most model years.

The EPA, NHTSA and California also completed a mid-term review by April 1, 2018 that assessed whether the standards for model years 2022 to 2025 remained appropriate given the long time frame. In January the U.S. EPA and NHTSA determined that the standards remained appropriate, but 2 months later they announced they were reconsidering this decision. A final determination was released in April 2018 that the standards for 2022 to 2025 were not appropriate and should be revised. Out of this came the *Safer Affordable Fuel-Efficient Vehicles Final Rule* in 2 parts. The first part was released in September 2019 and dealt exclusively with revoking California's waiver to enforce its own GHG emission standards and zero-emission vehicle standards. The second part was published in April 2020, and established new standards for model years 2021 to 2026, which increase in stringency by about 1.5% per year.

California, several other states, and other groups have begun litigation against the new standards and the revoking of California's waiver. This litigation remains on-going.

2.2.2 New standards for model years 2021 to 2026

Table 1 and Table 2 show the maximum and minimum target values used to establish the fleet average standards for both passenger vehicles and light trucks. The new standards increase in stringency by about 1.5% per year, compared to about 5% per year under the

[1] Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington State have already adopted the state's LDV GHG standards. Colorado, New Mexico, Minnesota and Nevada will adopt them in later model years.

previous standards.

Table 1: Minimum and maximum targets for passenger vehicles

Model year	Min target Previous, (g/mi)	Min target Final Rule, (g/mi)	Max target Previous, (g/mi)	Max target Final rule, (g/mi)
2020	166	166	226	226
2021	157	162	215	221
2022	150	159	205	217
2023	143	156	196	214
2024	137	154	188	210
2025	131	151	179	207
2026	N/A	149	N/A	203

Table 2: Minimum and maximum targets for light trucks

Model year	Min target Previous, (g/mi)	Min target Final Rule, (g/mi)	Max target Previous, (g/mi)	Max target Final rule, (g/mi)
2020	212	212	337	337
2021	195	207	335	329
2022	186	203	321	324
2023	176	200	306	319
2024	168	196	291	314
2025	159	193	277	309
2026	N/A	190	N/A	304

2.2.3 Other changes in the U.S. Final Rule

In addition to reducing the stringency of the standards, the 2020 U.S. Final Rule also modified several flexibility provisions for the U.S. regulatory program for GHG emissions from new light-duty vehicles, namely;

- creating a new multiplier for natural gas-fueled vehicles, similar to the multipliers for electrified vehicles, allows such vehicles to be multiplied by a prescribed factor when a company calculates its fleet-average emissions performance
- extending the provision allowing companies to treat electrified vehicles as having zero upstream emissions when calculating emissions performance from model year 2022 to 2026
- eliminating a provision that provided additional credits for certain full-size pickup trucks with strong hybrid powertrains and those whose performance is at least 20% better than their applicable target value

A separate U.S. regulatory action published in April 2020 corrected an error in a formula used to apply the multipliers for advanced technology vehicles. Canada has also corrected this same error in Canada's regulations with the publication in October 2020 of an interim order and intends to amend the regulation to make this change permanent.

2.2.4 Future U.S. standards

The U.S. is expected to begin reviewing their current standards in support of establishing ambitious, job-creating fuel economy standards as outlined in the Executive Order signed by President Biden on January 20, 2021. While the exact details of the future U.S. actions are not yet known, they may present an opportunity for Canada to collaborate with both the U.S. Federal Government and California on new emission standards. Because U.S. emission standards are incorporated by reference in Canada's regulations the fastest and most efficient route to implementing more stringent emission standards in Canada could be working with the U.S. to publish new standards in the U.S. Code of Federal Regulations.

2.3 California

As previously mentioned, the Clean Air Act lays out conditions under which the State of California may set emission standards for light-duty vehicles. Other states can voluntarily adopt California's standards in place of the federal standards under Section 177 of the Clean Air Act. On January 9, 2013, the U.S. EPA granted the California Air Resources Board's request for a waiver of Clean Air Act pre-emption to enforce its Advanced Clean Car regulations.

The U.S. EPA published a Final Rule in September 2019 which became effective November 26, 2019, revoking California's waiver for the portions of its Advanced Clean Cars Program related to GHG emission standards and zero-emission vehicle requirements. California, other states and third parties have filed litigation challenging this action.

In August of 2020, California signed voluntary agreements with 5 automakers, specifically BMW, Ford, Honda, Volkswagen and Volvo. Under these agreements, automakers voluntarily committed to comply with national standards which increase in stringency by about 3.7% per year beginning with model year 2022.

3. Analysis of environmental, economic, and technological factors

Canada's mid-term evaluation examined the Canadian impacts of the recent U.S. Final Rule, and assessed the feasibility of both these standards which increase in stringency by about 1.5% per year and more stringent standards, such as those that increase in stringency at about 5% per year (in line with the previous U.S. standards).

The mid-term evaluation included an in-depth analysis of the current and historical performance of the Canadian light-duty vehicle fleet and the credit and deficit balances of regulated companies under the current regulations. A high-level cost-benefit analysis was conducted to inform the final decision on the feasibility of establishing more stringent GHG emission standards in the near-term. This analysis included technology costs from the recent U.S. Final Rule and the U.S. EPA's Optimization Model for reducing Emissions of Greenhouse Gases from Automobiles (OMEGA). Emissions impacts were estimated using the department's Energy, Emissions and Economy Model for Canada (E3MC).

The projected fleet used in the analysis was developed in consultation with Innovation, Science and Economic Development Canada and considered various third party data sources, including historical end-of-model-year reports from regulated companies.

3.1 Current performance of the Canadian fleet

The department publishes an annual report on GHG emission performance of the light-duty vehicle fleet in Canada based on compliance information submitted by regulated companies. This report, provides in-depth results for each company, is available in the Canadian Environmental Protection Act (CEPA) Registry.

As outlined in the 2018 model year report, the average GHG emissions performance of all new passenger automobiles improved from 255 g/mile in the 2011 model year to 206 g/mile in the 2018 model year, a 19.2% reduction in GHG emissions per vehicle. The average GHG emissions performance of all new light trucks improved from 349 g/mile in the 2011 model year to 295 g/mile in the 2018 model year, representing a 15.5% reduction in GHG emissions per vehicle.

The regulations have been instrumental in influencing companies to make improvements to the efficiency of new light duty vehicles available in Canada since the 2011 model year. The regulations have also incentivized companies to increase the development and availability of advanced technology vehicles with lower and zero GHG emissions, such as battery electric and plug-in hybrid vehicles. Since the introduction of the regulations advanced technology vehicles have increased their share of new vehicles in Canada from 0.01% in the 2011 model year to 2.4% in the 2018 model year. More specifically, advanced technology vehicles comprised 4.5% of the passenger automobile fleet in the 2018 model year and 0.3% of the light truck fleet in the 2018 model year.

3.2 Analytical scenarios

The high-level cost-benefit analysis examined 2 scenarios to inform the decision on the feasibility of setting more stringent standards in Canada and estimate the impacts of the U.S. Final Rule in Canada. In scenario 1 the stringency of Canada's standards continues to increase in stringency by about 1.5% per year, in line with the recent U.S. Final Rule. Scenario *2* is used to describe a scenario in which Canada amends the regulations to establish new standards that would increase in stringency by about 5% per year for model years 2023 to 2025.

Scenario 2 is assumed to begin in model year 2023 to account for the time required to complete a regulatory amendment under the legislation governing the regulations, the Canadian Environmental Protection Act, 1999 (CEPA).

3.2.1 Standards before the publication of the U.S. Final Rule in April 2020

Prior to the publication of the recent U.S. Final Rule in April 2020, standards in both Canada and the U.S. were aligned and increased in stringency by about 5% per year. Table 3 and 4 show the passenger automobile and light truck target values used in establishing each regulated company's standards before the publication of the U.S. Final Rule.

Table 3: Original standards for passenger automobiles by model year

Model Year	Min footprint (ft^2)	Min target (g/mi)	Max footprint (ft^2)	Max target (g/mi)
2021	41	157	56	215
2022	41	150	56	205
2023	41	143	56	196

2024	41	137	56	188
2025	41	131	56	179
2026	n/a	n/a	n/a	n/a

Table 4: Original standards for light trucks by model year

Model Year	Min footprint (ft^2)	Min target (g/mi)	Max footprint (ft^2)	Max target (g/mi)
2021	41	195	73.5	335
2022	41	186	74.0	321
2023	41	176	74.0	306
2024	41	168	74.0	291
2025	41	159	74.0	277
2026	n/a	n/a	n/a	n/a

3.2.2 Standards after publication of the U.S. Final Rule

The less stringent standards established by the US Final Rule for both passenger automobiles and light trucks automatically apply in Canada because the Regulations incorporate U.S. standards by reference. Table 55 and 6 show the new passenger automobile and light truck target values used in establishing each regulated company's standards after publication of the U.S. Final Rule.

Table 5: Final rule standards for passenger automobiles by model year

Model Year	Min footprint (ft^2)	Min target (g/mi)	Max footprint (ft^2)	Max target (g/mi)
2021	41	162	56	221
2022	41	159	56	217
2023	41	156	56	214
2024	41	154	56	210
2025	41	151	56	207
2026	41	149	56	203

Table 6: Final rule standards for light trucks by model year

Model Year	Min footprint (ft^2)	Min target (g/mi)	Max footprint (ft^2)	Max target (g/mi)
2021	41	207	73.5	330
2022	41	203	74.0	324
2023	41	200	74.0	319
2024	41	196	74.0	314
2025	41	193	74.0	309
2026	41	190	74.0	304

3.3 GHG emissions impacts

The department conducted a high level cost-benefit analysis of the impacts of revised standards as published in the U.S. Final Rule. The projections indicate that Canadian GHG emissions from light-duty vehicles could be 5 megatonnes (Mt) higher than previous projections in 2030 as a result of these less stringent standards, if no other actions are taken.

The department projected GHG emissions from light-duty vehicles under scenario 1 and scenario 2 using the Energy, Emissions and Economy Model for Canada (E3MC). Based on this modelling, scenario 2 is projected to reduce GHG emissions in Canada by about 4.2 Mt more than scenario 1.

A full description of the high level cost-benefit analysis is outlined in section 3.8 of this document.

3.4 Sources of data and assumptions

The mid-term evaluation used data from end-of-model-year reports from regulated companies to establish the historical baseline performance and rate of improvement the fleet of new vehicles in Canada. Projections of future Canadian sales volumes were developed in consultation with Innovation, Science and Economic Development Canada (ISED) and were informed by various third party data sources and historical data submitted by regulated companies.

Canada's relatively small share (approximately 10%) of the integrated North American light-duty vehicle market means that it has historically been considered a technology taker, with very few Canada-unique model available in any given model year. The mid-term evaluation assumes that this trend would continue through the 2025 model year, and that the primary tool available to companies to meet more stringent Canadian standards would be modifying the mix of vehicles manufactured or imported for sale in Canada, rather than developing additional Canada-unique models. To ensure a conservative estimate of potential costs, regulated companies were assumed to increase their sales of zero-emission vehicles (a relatively high-cost technology) and decrease their sales of conventionally powered vehicles to achieve compliance with the more stringent standards assessed in scenario 2.

Conventional vehicles were assumed to improve their performance by about 1.5% per year, in line with the requirements of the recent U.S. Final Rule, and the mid-term evaluation used the same projected technology costs for conventional vehicles as the U.S. Final Rule. The U.S. Final Rule did not provide detailed cost estimates for zero-emission vehicle technologies, and the mid-term evaluation used zero-emission vehicle costs from the most recent public version of the U.S. EPA's OMEGA model.

3.5 Potential impacts on the competitiveness of Canadian light-duty vehicle manufacturing sector

The competitiveness of the Canadian automotive manufacturing sector within an integrated North American market is affected by many factors including trade agreements, labour rates, energy costs, taxes and logistics. Alignment of Canada's emissions standards for new light-duty vehicles is another factor that affects the competitiveness of the Canadian automotive industry.

3.5.1 Overview of the Canadian automotive manufacturing sector

The automotive sector is the second largest manufacturing sector in Canada and one of the country's largest export industries accounting for $16 billion in GDP and employing over 560 000 Canadians (135 000 directly and 427 000 indirectly). Driven by the operations of 5 global manufacturers operating 7 assembly facilities and nearly 700 parts suppliers, Canada produced 1.8 million vehicles in 2019, ranking 12th in the world. In 2019 there were more than 1.9 million vehicles sold to Canadians, consisting of over 250 product lines that included over 1 000 unique vehicle trim levels. Currently, 15 of these product lines are manufactured in Canada: Chevrolet Equinox; Chrysler 300, Pacifica (including the Pacifica Plug-In Hybrid), Voyager; Dodge Challenger, Charger and Grand Caravan; Ford Edge and GT; Honda Civic and CR-V; Lexus RX350 and RX450h; Lincoln Nautilus; and Toyota RAV4 (including the RAV4 Hybrid).

Canada's automotive industry is part of an integrated North American market with over 90% of vehicles produced in Canada subsequently exported to the U.S. In addition to vehicles, parts often cross the Canada-U.S. border up to 6 times before a vehicle rolls off an assembly line.

3.5.2 Competitiveness analysis

Prior to recent announcements made by FCA, Ford and GM, Canada's automotive manufacturing sector had experienced a decline in its share of overall North American automotive investment and production. This decline led to the closure of an assembly plant in Oshawa, an announced shift reduction in Windsor, and the loss of thousands of high paying manufacturing jobs. The recent announcements of planned new investments by FCA, Ford and GM including the reopening of the Oshawa truck plant, is evidence of the Government's commitment to ensure that the sector remains part of Canada's most important industries in the future.

The key challenge for the Canadian automotive sector is that Canada is a high-cost jurisdiction in comparison to the Southern U.S. or Mexico. The higher cost of labour, electricity, logistics, and taxes affect Canada's ability to compete in the integrated North American market. For example, the current average hourly wage for vehicle assembly workers in Canada is approximately 4 to 5 times greater than in Mexico.

Canada's environmental compliance costs such as the federal carbon pricing system add another cost for Canadian automotive manufacturers to bear, further reinforcing the perception that Canada is a high-cost jurisdiction. Prior to recent announcements, automotive manufacturers generally chose to invest and manufacture in lower cost jurisdictions resulting in Canada receiving only 7% of North American automotive investment in the past 20 years.

3.5.3 Potential impacts of COVID-19 on competitiveness

The global COVID-19 pandemic has resulted in decreased consumer demand for vehicles, and industry analysts expect that it could take 4 or more years to return to pre-COVID sales levels. Automotive manufacturers are adjusting to this reality and altering long-term planning to account for new fiscal challenges, including delaying product launches, model refreshes, technology development, and investment decisions.

Furthermore, the decreased demand will lower production and open up capacity across North America. A number of Canadian facilities produce vehicles that are in declining segments (such as minivans), and/or models that can also be produced in the U.S. or Mexico. Canadian-based assembly plants could be at risk should automotive manufacturers decide to reallocate products to rationalize capacity utilization.

3.5.4 Feedback from initial consultations

During consultations in 2018 and 2019, many regulated companies stated that maintaining alignment with U.S. standards was necessary for the Canadian automotive industry to remain competitive with other jurisdictions in North America. An industry association noted that regulatory harmonization allows for greater economies of scale and efficiencies, and that any customization for small markets such as Canada would increase costs.

The majority of regulated companies stated that Canada is a technology taker in the North American vehicle market. Some also stated that regulated companies would likely need to curtail the supply of certain vehicle models and reduce the choices available to Canadian consumers if future Canadian standards are more stringent than comparable U.S. standards. They further stated that this would be necessary because the small size of the Canadian market could not justify the economics of designing, testing and building vehicles solely for Canada. Some industry commenters also stated that consumers may respond to limited vehicle choice or higher vehicle purchase prices in Canada by delaying the purchase of new vehicles or opting to purchase new or nearly-new vehicles from the U.S.

During consultations in 2018 and 2019, the majority of NGOs and members of the public stated that Canadian emission standards should consider how the Canadian auto sector can maintain its competitiveness in the context of the global marketplace. These commenters stated that they expected a growing demand for low- and zero-emissions vehicles in both Canada and other parts of the world, and that Canada should look to position itself to take advantage of these trends.

3.5.5 Prospects for future investment

Automotive manufacturers are continually investing in technologies to improve vehicle performance and meet regulatory requirements in the markets where their vehicles are destined to be sold. Canada has historically had a policy of aligning its safety, air pollutant, and GHG emission standards with the U.S. Alignment has historically achieved emissions reductions in the most cost-effective manner. For decades, automotive manufacturing companies have been designing and manufacturing vehicles for the integrated North American market, and Canadian demand for a certain vehicle model has not been a strong driver of production mandates for Canadian manufacturing facilities.

Attracting new investments in automotive manufacturing, and securing the manufacturing footprint remains a priority for the Government of Canada. Manufacturing plants serve as anchors for the broader automotive ecosystem and provide economic prosperity both regionally and nationally. From 2015 through 2019, the automotive industry announced over $6.7 billion in new investments in Canada, leveraging $460 million in support from the Government of Canada through programs such as the Strategic Innovation Fund. In October of 2020, the federal and Ontario governments announced that they would each invest $295 million to help upgrade Ford’s Oakville assembly plant to start making electric

vehicles. FCA and GM also announced their intent to make major investments in their Canadian manufacturing operations in the fall of 2020. These investments are positive signals for the future of the auto sector in Canada, despite overall auto sector investment in Canada trailing North American competitors in recent decades.

Canada is well positioned to design and build the vehicles of the future with strong information technology and traditional automotive manufacturing clusters in Southern Ontario. The Government of Canada is focused on helping shape the future of the automotive industry and continues to pursue investment opportunities to advance this longer-term interest.

3.6 Potential safety impacts

In addition to making continuous improvements to conventional internal combustion engine technologies, companies have been incorporating an array of innovative approaches to vehicle designs in their efforts to improve fuel economy and reduce CO_2 emissions. These approaches include new structural design architectures and the use of advanced lightweight materials to reduce vehicle mass while still meeting all applicable performance based safety standards.

Under the Motor Vehicle Safety Act, Transport Canada regulates the manufacture and importation of motor vehicles to reduce the risk of death, injury and damage to property and the environment. Transport Canada develops and enforces over 60 Canada Motor Vehicle Safety Standards covering a broad range of vehicle types. Light-duty vehicles must meet a considerable number of crashworthiness and crash avoidance standards. These requirements are performance-based and the pass/fail criteria are independent of vehicle mass within each vehicle's class-specific test conditions. As such, the level of safety set by Canadian federal safety standards for these vehicles is not anticipated to diminish, independent of any other mandatory fuel efficiency or emissions regulations that may influence vehicle mass or other vehicle attributes.

3.7 Flexibilities not incorporated by reference

Due to differences in the enabling legislation in Canada and the U.S., some aspects of the regulations are aligned with the U.S., but not incorporated by reference. Several of these provisions were modified in the U.S. by recent Final Rules or Determinations and are no longer aligned with the related provision in Canada's regulations. The mid-term evaluation considered the potential impact of changes to 5 recently modified flexibility provisions as described below.

3.7.1 Technical amendment to the advanced technology vehicle multiplier formula

On April 23, 2020, just prior to the publication of the Final Rule, the U.S. EPA published the *Light-duty Vehicle Greenhouse Gas Program Technical Amendments* correcting an error to the formula used to apply the multiplier provisions for Advanced Technology Vehicles (ATV). This ATV multiplier formula correction was applied retroactively beginning with the 2017 model year.

The department has been aware of this error since 2017 but, in order to maintain alignment with the U.S., chose to wait to correct it until the U.S. EPA finalized its correction.

The Minister of the Environment issued an Interim Order correcting the formula on October

13, 2020. This Interim Order was published in the *Canada Gazette*, Part I on October 31, 2020. The Interim Order immediately corrects this error, providing certainty to stakeholders while the department develops an amendment to the regulations which would permanently correct this error.

3.7.2 New multiplier for natural gas vehicles of model years 2022 to 2026

As part of the recent Final Rule, the U.S. EPA introduced a multiplier for vehicles powered by natural gas. Emissions reductions from natural gas light-duty vehicles versus gasoline fueled vehicles are relatively small. Regulated companies have reported very low or zero volumes of natural gas powered light duty vehicles manufactured or imported into Canada for the purpose of sale. There are fewer than 50 natural gas fueling stations in Canada, with most of these being fleet fueling locations in Alberta.

The emissions impact from adopting this multiplier is expected to be negligible due to low market share of natural gas light-duty vehicles and the small performance difference between natural gas and gasoline powered vehicles.

3.7.3 Changes to special credits provisions for hybrid and high efficiency pickup trucks

The U.S. EPA removed a special credit provision that was due to expire after the 2021 model year related to hybrid pick-up trucks and those that performed at least 20% better than their applicable target value. The regulations in Canada still include these special credit provisions, and they are scheduled to end after the 2021 model year in Canada. No company has ever claimed these credits in Canada, and no company has announced plans to launch vehicles in sufficient volumes that would qualify for these credits in Canada before they expire.

3.7.4 Changes to the provision for upstream emissions from electric vehicles

The U.S. extended a provision which assumes that electric vehicles generate zero upstream emissions through model year 2026. Canada's regulations currently assume this through model year 2021 meaning that regulated companies in Canada would be required to account for upstream emissions from electric vehicles for the 2022 through 2025 model years once the surpass a certain sales threshold for these vehicles. Current projections indicate that many companies will remain below these thresholds through 2025, while some companies may reach these thresholds as soon as the 2023 or 2024 model years.

Removing the requirement to account for upstream emissions from electric vehicles would increase the compliance benefit regulated companies receive when manufacturing importing electric vehicles for the purpose of sale in Canada. The current structure of provisions in the regulations for upstream emissions may also act as a disincentive from companies to deploy high numbers of electric vehicles, as only this companies exceeding certain sales thresholds would be required to account for upstream emissions from these vehicles. Furthermore, requiring companies to account for upstream emissions in Canada when they are not required to do so in the U.S. could discourage companies from deploying high volumes of zero-emission vehicles in Canada.

Removing provisions which would require companies to account for the upstream emissions

of electric vehicles once they surpass certain sales thresholds could result in regulated companies generating additional credits and increase GHG emissions in Canada by less than 1 Mt.

3.7.5 Standards for small volume companies

The U.S. EPA recently finalized company-specific standards for some small volume companies retroactively for the 2017 to 2021 model years. The U.S. has not indicated when it may develop standards for these companies for the 2022 and later model years.

In Canada, companies which import or manufacture an average of 750 or fewer vehicles per year are not required to comply with the fleet average GHG emission standards. These companies are typically importers of high-performance vehicles in a niche market.

While these vehicles emit higher levels of CO_2 than average light-duty vehicles, their impact on total light-duty vehicle GHG emissions are negligible due to the small volumes entering Canada. Developing emission standards for these companies could result in emissions reductions in Canada of less than 0.01 Mt in 2030.

CEPA does not grant the Minister the authority to apply standards retroactively to these companies and an amendment to the regulations would be required to establish new standards for these companies or to align them with the U.S. EPA.

3.8 High level cost-benefit analysis

As part of the department's efforts to asses the impact of the recent U.S. Final Rule and the feasibility of establishing more stringent GHG emissions standards in Canada relative to those in the U.S. Final Rule, the department conducted a high level cost-benefit analysis of 2 potential regulatory scenarios as described in section 3.2. Scenario 1 included standards would increase in stringency by about 1.5% per year, in line with the recent U.S. Final Rule. scenario 2 included standards that would increase in stringency by about 5% per year for the 2023 to 2025 model years. The analysis assumes that companies would increase the sales of zero-emission vehicles while decreasing the sales of conventional vehicles to achieve compliance with the more stringent standards in scenario 2.

3.8.1 Approach to benefits and costs

An analysis of a number of different factors related to the automotive sector was done to understand the net societal costs and benefits of changing the light-duty vehicle GHG emission standards contained in the Regulations in Canada. For this high level analysis, the department chose to focus on 3 specific categories that have historically accounted for more than 85% of the costs and benefits in reducing emissions from light-duty vehicles. These 3 factors are technology costs, fuel savings and CO_2 emissions reductions. Technology costs and fuel savings are expressed in 2018 CAD, while CO_2 emissions reductions are expressed in both megatonnes of CO_2 incurred/abated and monetized in 2018 CAD.

The technology costs used in this analysis come from the most recent publications from the U.S. EPA and NHTSA, with appropriate adjustments to $2018 CAD. The fuel costs used in the analysis are provided the department's Economic Analysis Directorate and are consistent with those used by the department when assessing the impact of other measures.

3.8.1.1 Fuel savings benefits

The department model assumes that any additional technology cost incurred by manufacturers to improve vehicle emission performance are passed on to consumers. The fuel savings resulting from technology changes are retained by consumers. The model assumes that all fuel savings are the result of increased zero-emission vehicles penetration and not other technologies and light weighting of material.

3.8.1.2 Emissions benefits

The emission reductions that result from a particular stringency vary by year as consumers purchase new vehicles which replace older, less efficient vehicles that have reached the end of their useful life. The monetary benefits of the emission reductions result from applying the societal cost of carbon to these reductions.

For this analysis, the department assumes there is no future change in stringency beyond model year 2026, which is the last year of increasing stringency under the standards specified in the U.S. Final Rule.

3.8.1.3 Costs

The costs included in this high level analysis focus on the technology costs incurred by manufacturers to improve the average performance of the vehicles to comply with the standards in each scenario. The analysis assumes that Canada remains a technology taker in the North American market, and that technology costs result from the increased deployment of zero-emission vehicles rather than improving the performance of conventionally fueled vehicles.

3.8.2 Analysis of resulting Zero-Emission vehicles deployment

The high level cost-benefit analysis assumes that manufacturers would deploy additional zero emission vehicles in place of conventional vehicles to reduce their fleet average GHG emission performance to comply with the more stringent standards assessed in scenario 2, rather than develop new powertrains for conventional vehicles. The results of the fleet composition in the 2 scenarios are summarized in table 7 below.

Table 7: Projected standard and ZEV penetration for scenarios 1 and 2

Model year	Total new vehicle sales (millions)	Scenario 1: Fleet average target (g/mi)	Scenario 1: ZEV market share for compliance	Scenario 2: Fleet average target (g/mi)	Scenario 2: ZEV market share for compliance
2023	1.72	237	3%	228	6%
2024	1.78	234	3%	217	9%
2025	1.80	230	4%	207	11%

3.8.3 Key results

Table 8 provides the estimated emissions impacts of adopting scenario 2 versus scenario 1. Table 9 summarizes the monetized impacts of adopting scenario 2 versus scenario 1. Payback period is the amount of time (in years) that would be required for fuel savings for

the purchaser of a new vehicle to surpass the upfront technology costs paid when the more efficient vehicle is purchased.

Table 8: Changes in GHG emissions between scenarios 1 and 2

Calendar year	2025	2030	2035	2040	2045	2050
Change in GHG equivalent emissions (Megatonnes)	-1.3	-4.2	-5.8	-6.4	-7.0	-7.5

Table 9: Incremental technology costs and savings between scenario 1 and 2 (in billions of $2018 CAD)

Model year (MY)	MY2023	MY2024	MY2025	Sum
Technology costs	-0.6	-1.1	-1.4	-3.1
Fuel savings	+1.1	+1.8	+2.2	+5.1
GHG benefits	+0.1	+0.2	+0.2	+0.5
Net benefits	+0.6	+0.9	+1.0	+2.5
Payback period (years)	3.8	4.8	5.5	

The high level cost-benefit analysis indicates that adopting more stringent standards in line with scenario 2 would likely result in net benefits. The ratio of benefits to costs is less than 2 to 1, which is lower than historical regulations to reduce GHG emissions from light-duty vehicles. This lower ratio of benefits to costs is due to the department's assumption that regulated companies would need to deploy additional zero emission vehicles to comply with more stringent standards, as zero emission vehicles are a relatively high-cost technology.

Overall, the cost-benefit analysis indicates that adopting more stringent standards for the 2023 to 2025 model years could result in net benefits of approximately 2.5 billion in 2018 CAD. Zero emission vehicles are projected to achieve about 11% market share in model year 2025 in scenario 2 versus about 4% market share in scenario 1. Scenario 2 is projected to result in GHG emission reductions of about 4.2 Mt in 2030 than those in Scenario 1.

3.9 Other factors affecting the feasibility of more stringent standards

Several other factors were examined by the department to inform a decision on whether the standards established in the recent U.S. Final Rule or more stringent standards are appropriate and feasible.

3.9.1 Compliance feasibility based on historical trends

As shown in Figures 1 and 2 below and explained in the public report on the GHG emission performance of the 2018 model year light-duty vehicle fleet, the GHG emissions performance of regulated companies has steadily improved since the regulations first came into force with the 2011 model year.

Figure 1: Historical performance of the passenger automobile fleet

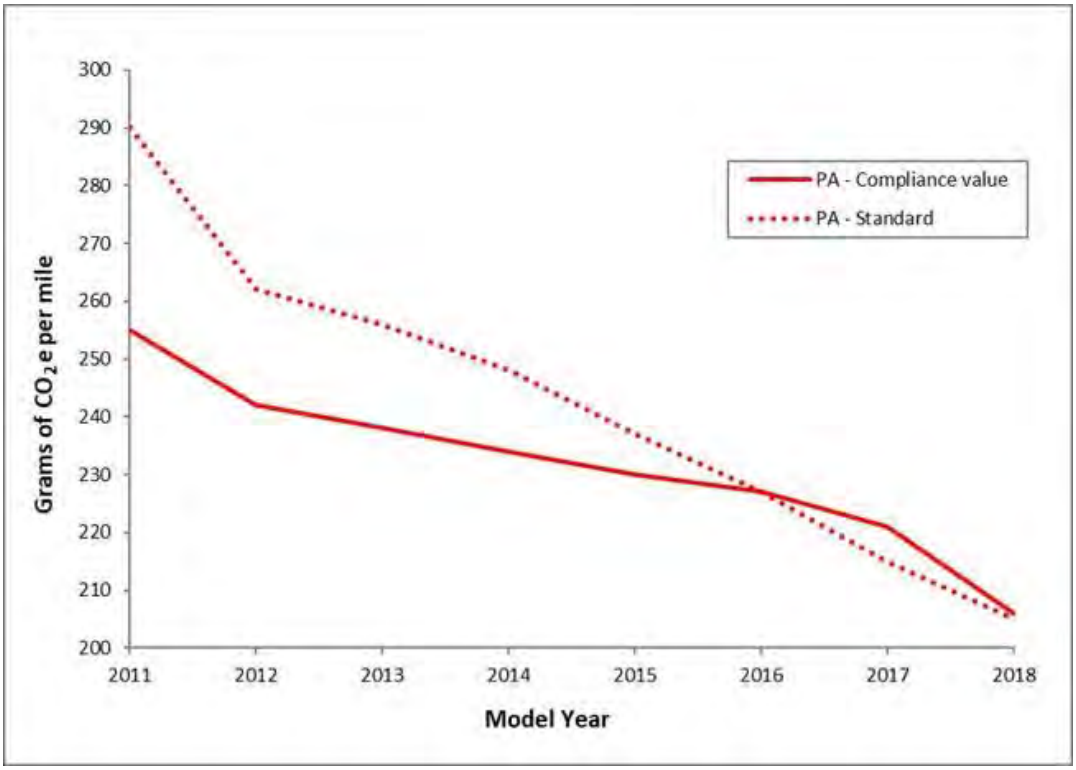
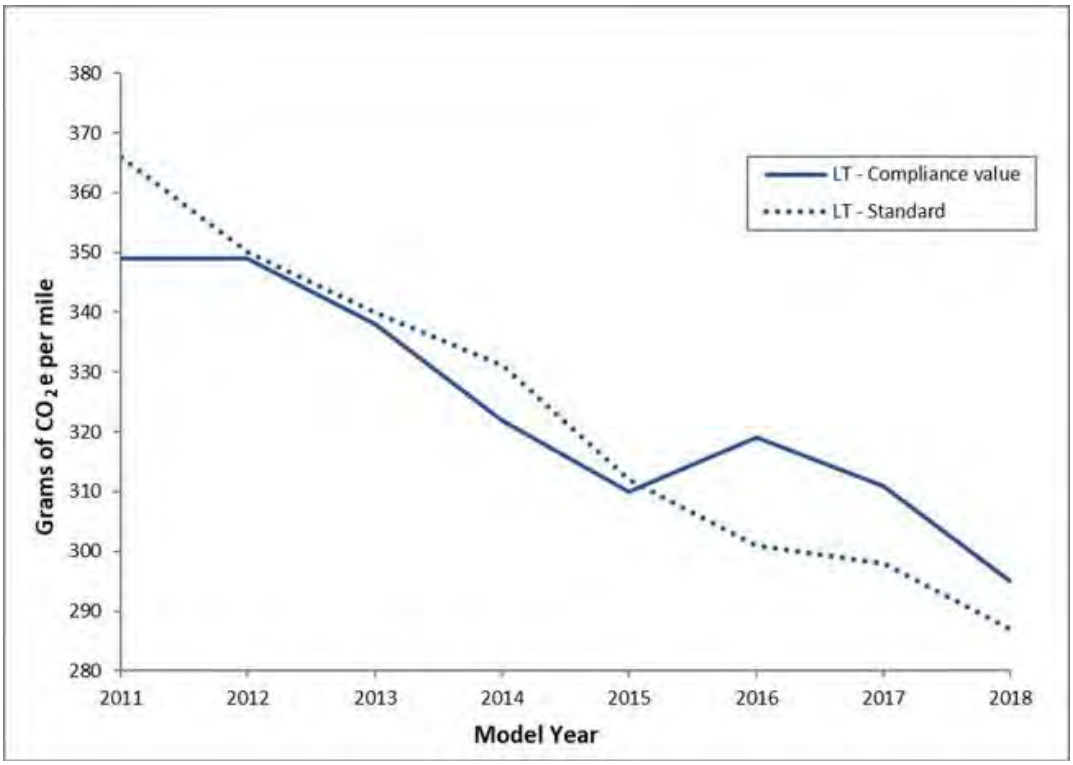

300
290
280
270
260
250
240
230
220
210
200
Grams of CO_2e per mile
2011
2012
2013
2014
2015
2016
2017
2018
Model Year
PA - Compliance value
PA - Standard

Figure 2: Historical performance of the light truck fleet

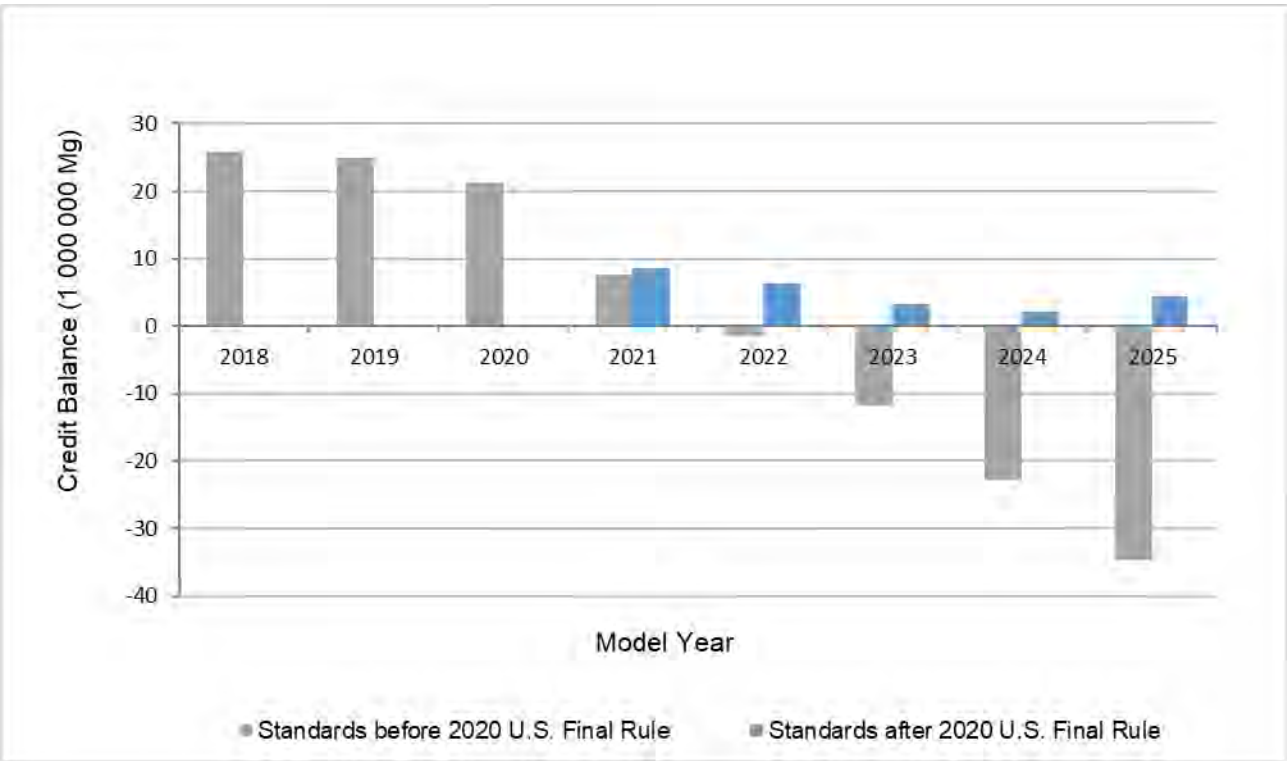


However, the performance of companies has improved at a slower rate than the increase in stringency of the standards. The emission credit system built into the regulations resulted in most companies generating emission credits in the earlier years of the regulations, and some companies consuming credits in the later years of the regulations.

It is important to note that emission credits may only be used to offset a deficit for a fixed period of time, and that a substantial portion of existing credits will expire after the 2021 model year. This will make it more difficult for companies to comply with future standards.

The department conducted a high-level analysis which assumed that regulated companies would continue to improve their performance at historical rates, and assessed the future fleet wide credit balance based on the standards before and after the recent U.S. Final Rule was published. As shown in Figure 3, maintaining historical rates of improvement would put regulated companies roughly on track to comply with the standards that are in place since the publication of the recent U.S. Final Rule. However, regulated companies would not have been on track to achieve compliance with the mores stringent standards that were in place prior to the publication of the U.S. Final Rule. Compliance with these more stringent standards would only have been possible with a substantial acceleration in the annual rate of improvement achieved via substantial changes to product offers from regulated companies, rather than incremental improvements to existing product offerings.

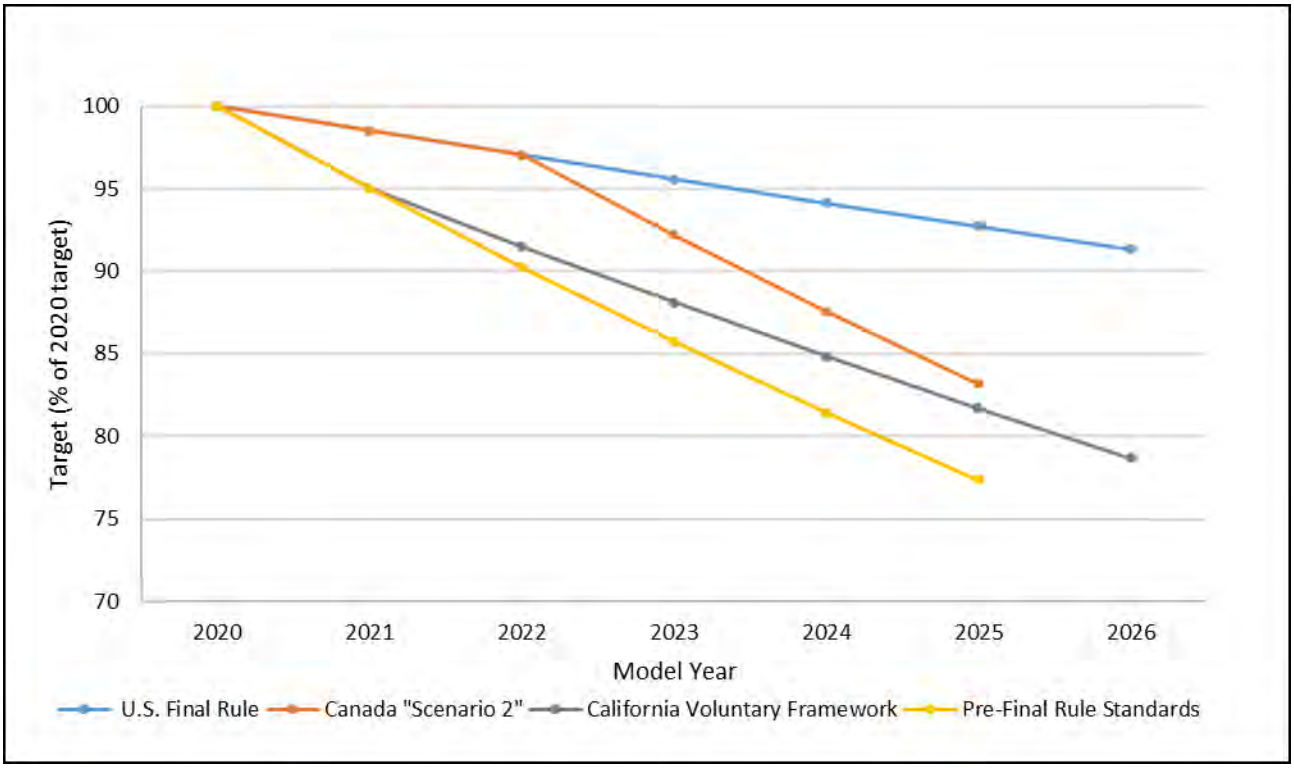
Figure 3: Projected credit balances based on standards before and after the recent U.S. Final Rule



It is important to note that, in absolute terms (grams CO2 / mile), the standards that were in place prior to the 2020 U.S. Final Rule were more stringent than those in California's voluntary framework or those considered in the "scenario 2" analysis. These differences are illustrated in Figure 4.

This analysis combined with the high level cost-benefit analysis suggests that while more stringent standards than those in the recent U.S. Final Rule can be justified, there are likely limits to how much more stringent these standards can be. The U.S. standards in place before the Final Rule may not have been feasible for regulated companies in Canada without rapid and substantial changes to their product offerings.

Figure 4: Target stringency of different regulatory scenarios in North America



3.9.2 Supply and demand for zero emission vehicles

While zero emission vehicles have steadily gained market share over the last number of years, the department notes that both the supply of and demand for zero-emissions vehicles is not growing at a pace necessary for Canada to achieve its emissions reduction objectives. Some studies have shown that additional education and awareness, subsidies and charging infrastructure would increase demand for zero emission vehicles. Other reports have indicated that there is at least some unmet demand for zero emission vehicles in some parts of the country.

A survey by J.D. Power found that few consumers have any experience with electric vehicles and that charging station availability, driving range and purchase price are reported as the top barriers to adoption of zero emission vehicles. Conversely a report on zero-emission vehicle supply published Dunsky Energy Consulting for Transport Canada stated that inventory levels across Canada are below optimal levels to meet consumer demand and that availability is uneven across the country, with the greatest inventory levels in Quebec and B.C.

In recent years, the purchasing preferences of Canadian consumers has shifted towards vehicles classified as light trucks (such as most SUVs, crossovers and pickup trucks) and away from vehicles classified as passenger automobiles (such as sedans, some SUVs and crossovers). While a majority of the zero-emission vehicle models available on the market to date are classified as passenger cars, the majority of announced or recently introduced zero-emission vehicle models are classified as light-trucks. This includes an electric version of the Ford F-150 (the best-selling vehicle in Canada) and a plug-in hybrid version of the

Toyota Rav4 (the best-selling SUV in Canada).

4. Comments received during consultations

The department hosted consultations with stakeholders on the mid-term evaluation in August and September of 2020. These consultation sessions were held virtually, in line with public health guidelines. They included a general consultation session open to all stakeholders, more targeted consultation sessions with regulated companies, subnational governments, NGOs and members of the public, and numerous bilateral meetings.

These consultation sessions informed stakeholders of the analysis the department planned to complete before concluding the mid-term evaluation, and sought feedback on several consultation questions related to the flexibility provisions in the regulations, the data used in the department's analysis, the methodology used in the cost-benefit analysis, and potential impacts on the competitiveness of the Canadian auto industry.

Stakeholders were requested to provide written comments by September 30th, 2020. The department received 25 written comments by email from the following groups: regulated companies and their associations (12), NGO (6), other industry stakeholders (4), provincial governments (1), and members of the public (2). A summary of the comments received and the department's response are below.

4.1 Stringency of the light-duty vehicle GHG emission standards

Most regulated companies and their associations, with a few exceptions, reiterated their support for Canada to maintain full regulatory alignment with the U.S. Those in favour of maintaining alignment with U.S. standards stated that Canada is a technology taker in the North American vehicle market and that most regulated companies would need to restrict the models available to Canadians to ensure compliance if Canadian standards were more stringent than the U.S. standards. An association further stated that if manufacturers limited the availability of certain models in Canada to achieve compliance with more stringent standards in Canada relative to the U.S., this could increase the risk of individual Canadians importing vehicles from the U.S.

There are 2 regulated companies that stated they would support Canadian standards that are equivalent to the targets under California's voluntary framework, which are set to increase at about 3.7% per year for model years 2022 to 2026. Another regulated company stated that Canada should not consider any standards more stringent than those presented under scenario 2. This regulated company also stated that their planned products will be designed to comply with the California voluntary framework.

NGOs supported increasing the stringency of Canada's standards beyond the stringency of those in the U.S. Final Rule. Some advocated for Canada to adopt the standards described in scenario 2 while others supported aligning with the stringency level established under the California voluntary framework. These NGOs noted that increasing the stringency of Canada's GHG emission standards for light-duty vehicles was necessary to further reduce emissions from the sector and contribute towards achieving Canada's emissions reduction goals.

A provincial government advocated for adopting the standards outlined under scenario 2.

The department also received2 comments from the public supporting more stringent standards, either adopting the standards described in scenario 2 or those in place in the U.S. before the recent U.S. Final Rule.

Response: The department has had a policy of aligning transportation emissions standards with those of the U.S. in order to provide significant environmental and economic benefits to Canada while minimizing costs to industry and consumers.

The Canadian light-duty vehicle market currently comprises essentially the same vehicle offerings as the U.S. light-duty vehicle market, with the volume of each model largely dictated by local demand. The Department acknowledges that introducing standards which are more stringent than the U.S. standards could result in manufacturers altering the mix of vehicles available to Canadians and in some cases, regulated companies might limit the availability of some vehicle models in Canada.

The department acknowledges that limited availability of certain vehicle models in Canada could potentially increase the importation of some vehicle models from the U.S. by consumers. However, there are logistical and financial barriers that would dissuade many Canadians from taking these actions as many regulated companies do not honour the warranties of new vehicles purchased in the U.S. that are subsequently imported into Canada.

The high-level cost-benefit analysis concluded that establishing more stringent standards in Canada is likely to generate benefits that would outweigh the costs.

The Government of Canada has committed to exceed its commitment under the Paris Agreement and achieve net-zero emissions by 2050. The department's analysis indicates that further reductions of GHG emissions from light-duty vehicles are necessary to achieve these goals and this point was also made by multiple commenters during consultations.

Finally, the department notes that the U.S. is expected to begin reviewing their current standards in support of establishing ambitious, job-creating fuel economy standards as outlined in the Executive Order signed by President Biden on January 20, 2021. This may present an opportunity for the department to build on its history of successful collaboration with the U.S. EPA and California in developing stringent, harmonized Canada-U.S. standards that reduce emissions from light-duty vehicles while providing the greatest economies of scale and lowest costs for the automotive industry and Canadian consumers.

4.2 Compliance flexibilities

The department sought comment on various flexibility provisions in the regulations as described in Section 3.7, and received multiple comments on each of these flexibility provisions in response to consultations.

4.2.1 Consideration of upstream emissions from electric vehicles

Regulated companies and their associations broadly supported aligning with the U.S. to extend the provision that allows companies to exempt manufacturers from accounting for upstream emissions through model year 2026. The associations stated that this alignment is the highest priority change for their members. They stated that there is less rationale for Canada to consider upstream emissions than the U.S., because Canada's electrical grid is

much lower emitting than the U.S. Regulated companies and their associations also stated that the structure of the provisions for upstream emissions provides a disincentive for companies to deploy high levels of electric vehicles, because they would be negatively affected by this provision. Companies that deploy low levels of electric vehicles would be unaffected.

Multiple regulated companies and their associations also noted that the vast majority of EVs sold to date (greater than 90%) were in Ontario, Quebec and B.C., which are provinces whose electrical grid has even lower emissions intensity that the Canadian average.

Another regulated company suggested that if Canada were to continue to consider upstream emissions from zero-emission vehicles it should also consider emissions from the extraction, processing, and transport of other fuels.

NGOs provided a variety of viewpoints. Including supporting Canada maintaining its approach to require manufacturers to account for upstream emissions, but suggested that the sales threshold be removed so that the provisions were more equitable to all manufacturers. Some supported removing any requirement to account for upstream emissions, in line with actions taken by the U.S. EPA and California. Another organization stated that they were indifferent to whether or not the department modifies this flexibility provision because it is a complex policy question. It was noted that not accounting for upstream emissions incentivizes the deployment of electric vehicles but also provides more credits to manufacturers making these vehicles which can then be used to offset emissions of higher emitting vehicles.

A provincial government stated their support for aligning with the U.S. in exempting upstream emissions from zero-emission vehicles.

A member of the public was also in support of treating zero-emission vehicles as having zero upstream emissions, while another recommended requiring all companies to account for upstream emissions from zero-emission vehicles.

Response: Canada's regulations currently require companies to account for upstream emissions once they pass a certain sales threshold for the 2022 to 2025 model years. Considering the current market share of these vehicles, it is projected that only a few companies may reach these thresholds before the 2025 model year.

The department agrees that the current structure of the provisions could be a disincentive to companies in deploying high levels of electric vehicles in Canada relative to the U.S. The department has assessed how neglecting upstream emissions for all future model years could impact emissions in Canada. The existing formula for calculating upstream emissions already accounts for Canada's relatively low-emitting grid. Modifying the existing provisions to align with the U.S. is projected to increase GHG emissions in Canada by less than 0.01 Mt in 2030.

Aligning with this U.S. provision would be in line with the Government's objective to increase the deployment of zero-emission vehicles in Canada and will ensure that companies are provided with the maximum regulatory incentive to deploy zero-emission vehicles in Canada.

4.2.2 Multiplier for natural gas vehicles

Most of the regulated companies and their associations broadly supported aligning with the U.S. and adopting a multiplier for natural gas vehicles. They were of the opinion that it was important for compliance pathways to remain aligned between Canada and the U.S. even if those compliance pathways are not used in Canada.

A regulated company provided an opposing view stating that natural gas vehicles provide marginal improvement over conventional vehicles and that multipliers should be reserved for only the cleanest technologies like zero-emission vehicles. This company also noted that natural gas vehicles have a very small share of the Canadian market and that this provision was a low priority for them.

A couple of NGOs and a provincial government stated opposition to adopting a multiplier for natural gas vehicles, and that encouraging natural gas vehicles was not consistent with Canada's goal of eventually achieving net-zero emissions. They further stated that natural gas vehicles provide marginal benefits over conventional vehicles and that upstream emissions from natural gas are not insignificant, and that natural gas vehicles are a mature technology and thus do not need an incentive like a multiplier.

Contrarily a member of the public supported adopting the multiplier for natural gas vehicles.

Response: The department notes that regulated companies have reported zero or near-zero level of these vehicles manufactured or imported for the purpose of sale in Canada in recent years. The department further notes that Canada has less than 50 natural gas fueling stations across Canada.

The emissions reductions associated with natural gas light-duty vehicles are relatively small, and the U.S. Department of Energy has estimated full life-cycle reductions of 6% to 11%.

The department does not believe that the adoption of a multiplier for natural gas vehicles would meaningfully impact the sales of natural gas vehicles in Canada due to the lack of natural gas fuelling infrastructure and the almost complete lack of natural gas vehicles available in the market today.

4.2.3 Special credits for certain low emitting and hybrid pick-up trucks

Regulated companies and their associations generally supported maintaining alignment with the U.S. EPA and removing special credit provisions for low-emitting and hybrid pick-up trucks, with the exception of 1 company. The dissenting company advocated for this special credit provision to be expanded to apply to all light-duty trucks, not just full sized pickups, and stated that this could encourage manufacturers to deploy additional conventional hybrid SUVs.

NGOs either supported maintaining alignment with the U.S. and removing this special credit provision or stated that they had no opinion on this provision.

A provincial government supported maintaining this special credit as consumers are buying more pick-up trucks and this could encourage more efficient options.

A member of the public expressed support for maintaining the special credit for these

pickups.

Response: In the U.S, the special credits provision related to hybrid pick-up trucks and those that performed at least 20% better than their applicable target value has been removed for the 2021 model year.

In Canada, the special credits for high performing and hybrid pick-up trucks is already scheduled to end after the 2021.

No company has ever claimed these credits in Canada and current products available from regulated companies for the 2021 model year indicate that no company is expected to manufacture or import hybrid pickups in the volume necessary to claim this credit for the 2021 model year.

The department has determined that the special provisions for low-emitting or hybrid pick-up trucks in the Canadian regulations should be allowed to expire at the end of model year 2021.

4.2.4 Other flexibility comments

A regulated company requested specific expansions of various flexibilities in the Canadian regulations going beyond what is in the U.S. regulations. These included higher values for advance technology vehicle multipliers in Canada and extended early action credits.

In contrast, 1 NGO stated that Canada should maintain the phase-out of all multipliers as currently planned, in alignment with the provisions in the 2020 U.S. Final Rule.

Groups representing U.S.-based biofuel producers recommended that the department revise the regulations to assume that all flex-fuel vehicles are always operating using biofuels like E85. Currently the regulations provide additional credit for flex-fuel vehicles only when manufacturers can demonstrate that the biofuel is being used in these vehicles.

An association stated that flex-fueled powertrains capable of operating on fuel that is up to 85% ethanol failed to gain widespread adoption in the Canadian marketplace for a variety of reasons and that most light-duty vehicles are now compatible with fuels that contain up to 15% ethanol.

Response: As part of the amendments to the regulations completed in 2014, the department increased the advance technology vehicle multipliers in recognition of the lower emissions intensity of the Canadian electrical grid relative to the U.S. The department is not contemplating modifications to these multipliers at this time.

In response to comments on modifying the flexibility provisions related to the treatment of flex-fuel vehicles, the department reached out to associations representing regulated companies for their views on the expected future deployment of flex-fuel vehicles. These associations noted that flex-fuel vehicles have continually lost market share over the past several years. An association stated that this may be in part due to the increasing emission requirements (Tier 3) which are more difficult to meet for vehicles with a flex-fuel powertrain. These associations indicated that modifying credit provisions was unlikely to increase the deployment of flex-fuel vehicles in Canada given the integrated nature of the industry.

4.2.5 Standards for small volume manufacturers

Regulated companies and their associations had a variety of views on the new U.S. standards for small volume companies.

Several small volume companies and 1 industry association stated that Canada should maintain the current treatment of small volume companies under the regulations. They noted that the emissions from these vehicles are negligible in comparison to the overall fleet, and further stated that any new reporting requirements would be prohibitively costly. They stated that because these small volume companies sell identical models in the U.S. and Canada, Canada would automatically receive any emissions benefit that comes from the new U.S. standards for these companies.

Another industry association and several larger regulated companies stated Canada should adopt standards for these small volume companies in line with those standards in the U.S. noting that they directly compete with small volume manufacturers in the high-performance and luxury markets and exempting these smaller manufacturers from any standards puts larger companies at a competitive disadvantage. A regulated company stated they would support Canada removing this special treatment altogether and applying the same GHG emission standards to small volume manufacturers that all other manufacturers must meet. This approach was also suggested by another stakeholder from the fuels industry.

In regards to Canada developing small volume manufacturer standards aligned with the U.S. 2 NGOs expressed support. However, 1 of the NGOs noted this is not a priority issue because emissions from these companies are so small.

A provincial representative stated they supported Canada developing standards for small volume manufacturers as this would contribute to the federal government's long-term goal to have all new light-duty vehicles sold in Canada be electric by 2040.

A member of the public also stated they supported Canada developing standards for small volume manufacturers aligned with the U.S.

Response: The U.S. EPA recently finalized company-specific standards for some small volume companies to apply retroactively for the 2017 to 2021 model years and has not proposed standards for the 2022 model year and beyond. These company specific standards are less stringent than the standards applicable to larger companies.

In Canada, companies which import or manufacture an average of 750 or fewer vehicles per year are not required to comply with the fleet average GHG emission standard. These companies are typically importers of high-performance vehicles in a niche market.

While these vehicles emit higher levels of CO_2 than average light-duty vehicles, their impact on total light-duty vehicle GHG emissions are negligible due to the small volumes entering Canada, and adopting GHG emission standards for these companies would also lead to negligible emissions reductions.

The department also notes the concern of larger companies that compete with these small volume companies, and agrees that the current regulatory provisions provide a competitive advantage to small volume companies over larger ones. Based on this finding, the department believes that it would be appropriate for small volume manufacturers to comply

with an appropriately stringent standard.

The department also notes that CEPA does not grant authority to the Minister of the Environment to apply standards retroactively to these companies. The full range of options to reduce emissions from small volume companies will be considered as part consultations on future emission standards for light-duty vehicles in Canada.

4.3 Competitiveness of the Canadian auto industry

Associations representing regulated companies provided a variety of comments on the various factors impacting the competitiveness of the Canadian auto industry.

They stated that alignment with the broader, integrated North American market has been fundamental to maintaining vehicle affordability, model choice, and availability for consumers by minimizing costs for manufacturers. They stated that misalignment would increase the costs of manufacturing vehicles for the Canadian market, and that higher costs and model restrictions would negatively impact dealers and supply chain networks. They further stated that increased zero-emission vehicles sales would negatively impact dealership revenues due to the lower servicing requirements of zero-emission vehicles.

The associations noted that Canadian parts manufacturers are part of an integrated North American supply chain, and different standards in the 2 countries could negatively impact parts suppliers.

An association stated that the cost to develop unique technologies for Canada would be extremely expensive and not commercially viable given the small size of the Canadian market. They referenced a report entitled *Alternative and Future Technologies for Reducing Greenhouse Gas Emissions from Road Vehicles*, prepared for the Transportation Table Subgroup on Road Vehicle Technology and Fuels, completed by Sierra Research Inc. in July 1999. This report stated that the costs of developing technologies solely for the Canadian market would be double the cost of developing those technologies for the larger North American market.

The associations further stated that the new North American trade deal, Canada-United States-Mexico Agreement (CUSMA), and its domestic content requirements were likely to cause reorientation of supply chains within North America, and misalignment between Canadian and U.S. standards could increase the risk that the supply chain would shift away from Canada.

A regulated company stated that they conduct research and development of zero-emission vehicles in Canada, and also owns a facility that manufactures equipment used in their final assembly factories, and that reducing the stringency of Canada's emission standards could be detrimental to the growth of their research, development and equipment manufacturing activity in Canada.

Several NGOs commented that stronger Canadian standards would encourage companies to invest in the manufacturing of more advanced vehicles in Canada, such as hybrids and zero-emission vehicles. A NGO stated that continuing to align with the less stringent U.S. standards would hurt the competitiveness of Canadian companies versus European companies which are adopting zero-emission vehicles more rapidly than North America. Another organization provided data showing that Canada has lagged its global competitors

in zero-emissions vehicle manufacturing capacity, though these comments were submitted before the major investment was announced to convert Ford's Oakville assembly facility to manufacture zero-emission vehicles by the middle of this decade. This same organization also presented reports claiming that the expansion of domestic zero-emission vehicle manufacturing has the potential to provide a boost to Canada's job market and GDP. These reports were also referenced in several other organizations' comments.

Response: The department agrees that maintaining a common North American approach to regulating GHG emissions from vehicles has proven to be successful and has provided more certainty to the Canadian auto sector while minimizing administrative burden on regulated companies. The department has taken into account the comments received and is committed to working in collaboration with stakeholders including the industry, to minimize potential impacts to competitiveness of the auto manufacturing industry in Canada from any future changes to the existing regulations.

4.4 Zero emission vehicle mandate

Though the mid-term evaluation did not seek comments on whether Canada should adopt zero-emission vehicle requirements, there were several unprompted views received from various stakeholders regarding their position on a zero-emission vehicle mandate.

Multiple associations and 2 regulated companies stated an opposition to a mandated zero-emission vehicles requirement or target. They stated that it would penalize companies that were making significant improvements in their fleet and reducing emissions using other technologies that were not zero-emission vehicles. They also mentioned that, as most zero-emission vehicles are currently manufactured elsewhere and imported, it would encourage the sales of imported products over domestically manufactured vehicles. They also stated that the best way to encourage future zero-emission vehicle deployment was the continuation of predictable purchase incentives for consumers, such as the iZEV program.

An association provided some statistics correlating historical zero-emission vehicle sales volumes and available incentives and noting that zero emission sales volumes did not correlate as well with the introduction of a zero-emission vehicle mandate in Quebec and British Columbia.

Multiple NGOs stated their support for regulatory requirements that specifically targeted zero-emission vehicles. They argued that this would lead to investment in zero-emission vehicle manufacturing capacity in Canada. They also stated that this would be an important policy for ensuring that Canada meets its zero-emission vehicle and GHG emission reduction targets. A company involved in electric vehicle infrastructure also stated its support for a zero-emission vehicles mandate.

Response: Although consideration of a zero-emission vehicles mandate is outside the scope of Canada's mid-term evaluation, increasing deployment of zero-emission vehicles remains a priority for the Government of Canada. The department acknowledges views received from stakeholders and will be taking these comments into account when considering any future initiatives to reduce emissions from the light-duty vehicle sector and make progress towards achieving our national zero-emission vehicle sales targets.

4.5 U.S. election

Several regulated companies and their associations stated that the department should wait

until the results of the U.S. election are known before to finalizing the mid-term evaluation. They stated that the election had the potential to change the future policy direction of the U.S. government on vehicle emission standards and impact the on-going litigation related to the U.S. Final Rule and California's waiver.

Response: The department has noted that the U.S. is expected to begin reviewing their current standards in support of establishing ambitious, job-creating fuel economy standards as outlined in the Executive Order signed by President Biden on January 20, 2021. The department will continue to seek all opportunities to build on our successful history of collaboration with the U.S. EPA and California when considering future measures to reduce emissions from vehicles and engines.

4.6 Comments on data sources and analysis methodology

Associations representing regulated companies provided some qualitative comments on the data sources used by the department related to technology costs. These comments generally supported using data from NHTSA's VOLPE model rather than U.S. EPA's OMEGA model wherever possible, claiming that the OMEGA model underestimates technology costs, particularly when modelling higher levels of deployment of zero-emissions vehicles.

The associations representing most regulated companies stated that historical zero-emissions vehicles sales had been driven primarily by federal and provincial financial incentives, and that projections of ZEV sales out to 2025 should factor in the availability of future incentives. The associations stated that the higher levels of ZEV penetration required for compliance in scenario 2 of the high level cost-benefit analysis would require higher levels of incentives to consumers, either from governments or as subsidies from manufacturers.

The associations further stated that consumer purchase preferences and the pace of fleet turnover should be considered when assessing the feasibility of more stringent standards in Canada than the U.S. They stated that consumer interest and willingness to consider purchasing a zero-emission vehicle varies greatly across the country due to wide differences in climate, range requirements, incentives and charging infrastructure. They also noted that most zero-emission vehicles are passenger automobiles, with comparatively few models available that are classified as light trucks.

Finally, some regulated companies and associations noted that not all vehicles are equally profitable. Higher emitting vehicles are often the most profitable, and that profits from these vehicles cross-subsidize the development and deployment of lower emitting and zero-emission vehicles. They stated that adjustments to fleet mix can have unexpected results as companies seek to balance many factors, including consumer demand, vehicle profitability and compliance with applicable emission standards.

Regulated companies did not provide any detailed fleet projections, technology cost estimates or alternative data sets to be incorporated into the department's analysis.

Most NGOs felt that the data sources used in the high level cost-benefit analysis overestimated future costs of lower emitting technologies and underestimated benefits, particularly the cost estimates in the recent U.S. Final Rule.

These NGOs referenced over 30 public reports in their comments. These reports generally stated that the U.S. Final Rule overestimates technology costs by relying on outdated studies of vehicles from the 2010-2014 timeframe, and that compliance costs are lower than U.S. projections. An organization referenced other third party reports that project potential economic impacts of increased ZEV adoption in Canada. Another organization provided projections of the expected impact of the pandemic on EV sales in the U.S. and E.U.

A provincial government representative also provided a reference to several documents indicating that the costs of zero-emission vehicles are continuing to decline and the prevalence of zero-emission vehicles in the Canadian marketplace continues to increase.

Response: The department has reviewed the data and various reports that were referenced by the various stakeholders. This includes the comments and reports submitted by regulated companies and associations suggesting higher costs than those outlined in the U.S. Final Rule and OMEGA model, and those submitted by NGOs and others suggesting lower costs than those in the U.S. Final Rule in the OMEGA model.

The full body of evidence indicates that the costs provided by the U.S. Final Rule and the OMEGA model provide reasonable estimates of the costs of developing more stringent standards in Canada, as outlined in scenario 2 of the high level cost-benefit analysis. The department further recognizes that there is inherent uncertainty in projecting future technology costs and profitability of various technologies, and that the performance based nature of the standards means that companies are free to develop and deploy technology in any way that suits their particular circumstances. Historically, companies have often developed technologies which reduce emissions at lower costs than projected by regulators when regulations are first published.

The department also acknowledges that there could be substantially higher costs in developing technologies solely for the Canadian market. Given this, the department assessed costs and benefits assuming that adjustments to fleet mix (increased ZEV) would be the primary approach that regulated companies would take to comply with more stringent GHG emission standards in Canada.

The department notes that most zero-emission vehicle models have been passenger automobiles. However, many new zero-emission models that are classified as light trucks have been announced or released. This includes Ford's announcement that it will begin selling in 2022, a battery electric version of the F-150, the best-selling vehicle in Canada, and Toyota's recent introduction of a plug-in hybrid version of the Rav4, the best-selling SUV in Canada.

5. Conclusions

Based on the analysis of all the relevant factors outlined in this decision document, the department has reached the conclusions presented below.

5.1 Stringency of the standards

The department should not continue with the current standards which increase in stringency by 1.5% per year for the 2021 through 2026 model years. The standards would not provide adequate benefits to Canadians when compared to more stringent GHG emission

standards. These standards are also not adequate to make sufficient progress towards achieving Canada's emission reduction goals to exceed its 2030 Paris targets and to reach net-zero emission by 2050.

The U.S. is expected to begin reviewing their current standards in support of establishing ambitious, job-creating fuel economy standards as outlined in the Executive Order signed by President Biden on January 20, 2021.The department should collaborate with the U.S. and California to develop more stringent emission standards, in recognition of the integrated nature of the North American market.

While the U.S. standards in place before the Final Rule may not have been feasible for regulated companies in Canada without rapid and substantial changes to their product offerings, the department's high level cost-benefit analysis demonstrates that fuel savings for Canadians would offset the increased purchase costs of additional zero-emission vehicles in less than 6 years. Overall net benefits for this scenario are projected to exceed costs by a ratio of almost 2:1. A full cost-benefit analysis should be conducted for a variety of scenarios as part of the work to determine the most appropriate stringency level for future standards in Canada.

5.2 Consideration of upstream emissions from electric vehicles

The department should align with U.S. provisions and remove any consideration of upstream emissions from electric vehicles. Canada has a much lower emitting grid than the U.S., and failing to align with this change in the U.S. would treat electric vehicles less favourably in Canada than the U.S., despite Canada's cleaner grid.

The department further notes that treating all electric vehicles as having zero upstream emissions would treat all companies equally, while current provisions and their sales thresholds could disincentive companies from deploying high levels of zero-emission vehicles in Canada.

The department also notes that Canada has taken many steps to ensure that the emissions intensity of its electrical grid is further reduced in the future. Maintaining provisions which require companies to account for upstream emissions from electric vehicles would also require a continual reassessment of the emissions intensity of the electrical grid in Canada.

5.3 Multiplier for natural gas vehicles

The department should not introduce a multiplier for natural gas vehicles. These vehicles provide only marginal GHG benefit and have a very low prevalence in the Canadian market. There is also a low likelihood that these vehicles will gain substantial market share in the coming years due to a lack of fueling infrastructure in Canada and automakers' focus on developing zero-emission vehicles. The introduction of a multiplier for natural gas vehicles is unlikely to increase the market share of these vehicles in a meaningful way nor substantially contribute to Canada's emissions reduction objectives.

5.4 Special credits for certain low emitting and hybrid pickup trucks

The department should take no action and allow the special credit provisions for certain low emitting and hybrid pickup trucks to expire after the 2021 model year. No company to date has every made use of this credit provision and there are no companies on track to make use of this credit provision for the 2021 model year. Removing this provision to maintain alignment with the U.S. through a regulatory amendment or interim order would provide no

emissions benefit nor would it be expected to impact the compliance of any regulated company.

5.5 Standards for small volume companies

The department should develop future standards for small volume companies. While the department cannot implement retroactive company-specific standards for the 2017-2021 model years as was done in the U.S., the department should develop appropriate stringent standards for these companies in the future.

While any emissions reductions generated from standards for these companies are expected to be small, applying standards to these companies will also help ensure that they compete on a level playing field with larger companies in certain high-performance and luxury market segments.

5.6 Next steps

The department will begin a regulatory development process to develop more stringent standards to further reduce GHG emissions from light-duty vehicles in collaboration with the U.S. EPA and California, recognizing that progressive stringent emissions standards that are aligned across North America have historically provided significant environmental and economic benefits to Canada while minimizing costs to industry and consumers.

The department will commence consultations on how to best implement amendments to the flexibility provisions related to upstream emissions from electric vehicles, including considering the use of an interim order if it is determined that changes to this flexibility provision are needed before a final regulatory amendment can be published.