CLEAN ENERGY CANADA

BRIEFING NOTE September 2020

FOCUS: A National Zero-Emission Vehicle Standard

KEY TAKEAWAYS

- Despite growing demand for electric vehicles, **the number of EV makes and models available in Canada decreased between 2018 and 2019**. Nearly **70% of dealerships in Canada did not have a single EV** available for purchase in 2019 and the majority of them cited **wait times of three to six months** before a potential buyer could drive an EV off the dealership lot.
    - Moreover, **EV supply is unevenly distributed across provinces and territories,** with 78% of Canada's total inventory being located in Quebec and British Columbia—the two provinces with EV purchase incentives and sales requirements in place.

- Canada is currently not on track to meet its target of selling 100% zero-emission vehicles by 2040. According to Transport Canada, "without any further action, Canada could achieve zero-emission vehicle sales of 4% to 6% of all new light-duty vehicles purchased by 2025 and 5% to 10% by 2030."
    - Moreover, while other sectors are seeing a downward trend in emissions, **transportation-related emissions have risen by 8% since 2015.** One third of those additional emissions came from light-duty passenger trucks alone.

- To meet the growing consumer demand for EVs, achieve targets for both ZEV sales and emission reductions, and support building a zero-emissions auto sector ecosystem in Canada, the federal government should **develop regulations under the *Canadian Environmental Protection Act* that require automakers to achieve Canada's sales targets** (i.e. a **national zero-emission vehicle standard** for passenger vehicles).

- Many of **the world's largest automaking countries are regulating the transition to EVs**—whether through a ZEV standard, a ban on the sale of conventional vehicles, and/or stringent vehicle emission standards. A list of these countries is provided in Appendix A.

- To be successful, a national ZEV standard must be part of a larger policy package to address both supply and demand-side barriers to EV uptake, while also **ensuring Canada's auto sector captures a piece of the pie in the global shift to zero-emission vehicles**.
    - These include **renewed purchase incentives, EV infrastructure funding, and an auto industrial strategy** to support the sector's transition to a zero-emissions future.

- Done right, a zero-emission vehicle standard will **reduce GHGs**, **ensure all Canadians who want an EV have access to one**, **give consumers more choice** of EV models and price ranges, and provide regulatory certainty for **achieving Canada's ZEV sales targets**—all at little cost to the federal government and without placing onerous requirements on the automotive industry.

CURRENT CANADIAN CONTEXT

- Electric cars made up 3% of all vehicle sales across the country in 2019, up from 2.6% the year before. First quarter 2020 EV sales in Canada were 50% higher compared to the previous year and in March 2020 EVs represented 5.6% of sales—a new record.

- The federal government's Incentive for Zero-Emission Vehicles (iZEV) rebate program was introduced in Budget 2019, allocating $300 million to be spent over three years. Launched in May 2019, nearly half of the program's budget ($134 million) was spent in the first eight months. As of July 2020, the iZEV program has benefited over 53,000 Canadians and Canadian businesses, totaling almost $225M in incentives.[1]

- A recent Dunsky Energy study prepared for Transport Canada found that Canada saw a 24% decrease in EV inventory compared to 2018, despite an increasingly supportive policy environment, and a 25% jump in Canada-wide EV sales over that same time period. At the end of 2019, only 31% of dealerships in Canada had a single zero-emission car in stock. The majority of over 1,000 dealerships surveyed suggested a three to six month wait time for an EV.

- In 2019, a large majority of Canada's total electric vehicle stock (78%) and total EV sales (80%) were found in just two provinces, Quebec and British Columbia. Both provinces have ZEV standards and purchase incentives in place.

- The federal government has pledged to meet or exceed its Paris climate targets of reducing emissions 30% below 2005 levels by 2030, and achieve net-zero emissions by 2050.

- The transportation sector accounts for 25% of total national emissions, and passenger vehicles represent nearly half of that amount. While most economic sectors are seeing a downward trend in emissions, transportation-related emissions have risen by 8% since 2015.

[1] Data provided via email by Transport Canada on July 29, 2020.

  - With recent rollbacks on U.S.-Canada vehicle emission standards for model years 2021-2025 and consumer preference rapidly shifting towards pickup trucks and SUVs, transportation-related emissions will continue to climb.[2]

- Canada has set light-duty zero-emission vehicle sales targets of 10% by 2025, 30% by 2030, and 100% by 2040.
  - Under current policies, Transport Canada indicates that zero-emission vehicles could make up only 4% to 6% of all new light-duty vehicles purchased by 2025 and 5% to 10% by 2030. With low gas prices and weaker vehicle emission standards now on the books, these gaps could be even greater.

- Canada is the 12th largest vehicle producer in the world but significantly trails other countries on electric vehicles, with only 0.4% of global production.
  - Last year, Reuters analyzed recent budget announcements made by global automakers and found that $300 billion was earmarked for EV technologies. None of that investment is currently destined for Canada.

POLICY SOLUTION

- A phased-in, national zero-emission vehicle standard would **make clean cars available to Canadians across the country** and **enable Canada to meet its sales targets**, while **not being too restrictive on automakers**.

- A ZEV standard is a supply-focused policy that requires a **gradually rising percentage of vehicles sold by auto manufacturers to be zero-emission** (i.e. battery-electric, plug-in hybrid or hydrogen fuel cell vehicles). While purchase incentives help to drive demand, ZEV standards secure supply.

- Research evaluating different policy options, conducted by Simon Fraser University's Sustainable Transportation Action Research Team (START), concluded that a **ZEV standard or "mandate" would be "the most effective, low-cost and transformative policy"** to transition to EVs.[3]

- British Columbia and Quebec; California and ten other U.S. states; and China, have adopted ZEV standards for passenger vehicles to-date. The European Union has taken a similar but voluntary approach, offering manufacturers the option of meeting ZEV quotas in return for

[2] Canada was expecting 15 million tonnes of GHG reductions by 2030 but is projected to forgo 40% of those emission reductions by remaining aligned with the Trump administration's recent rollback on U.S.-Canada vehicle emission standards for model years 2021-2025.

[3] "Transformative" in this analysis refers to the policy's "ability to induce a larger shift towards ZEVs", "stimulate confidence, development, commitment and investment in a [ZEV] transition over the long-term", and "set clear and consistent requirements or rules that are likely to last a decade or more".

offsets that can be used to comply with post-2021 corporate average standards. According to the International Council for Clean Transportation, **these jurisdictions collectively account for about 90% of the global ZEV market**.

- In North America, California and the ten other ZEV mandate states represent roughly a third of new car sales in the United States. If Canada adopts a similar policy, this would represent a significant portion of the Canada-U.S. vehicle market being covered under a ZEV standard.
- A list of the world's top automaking countries and the ZEV standard or similar policies they have implemented to regulate the transition to EVs is provided in Appendix A.

- A ZEV standard works by specifying **mandatory ZEV credit requirements for manufacturers that increase over time**. Automakers get credit for each ZEV they make available for sale, and the number of credits awarded per vehicle correlates with the electric battery range of the vehicle (i.e. **more credits are awarded for vehicles with higher electric ranges**).

- The policy often includes **flexibility mechanisms allowing manufacturers to meet the ZEV credit requirements in different ways,** such as by purchasing credits from automakers that exceed the standard or bringing used EVs in from other jurisdictions. Automakers with excess credits can also sell them to other manufacturers or bank them for future use.

- ZEV standards play an important role in overcoming a key barrier to widespread EV adoption: a lack of consumer choice. **Limited EV model and price range options can deter consumers from going electric** even if purchase incentives and adequate charging infrastructure are in place.
  - Automakers tend to **prioritize ZEV sales in regions with stringent emission standards or ZEV standards**, concentrating their inventory in those regions. Buyers in other markets are left with long wait times and fewer models to choose from.
  - This has played out in the Canadian context: a 2020 Dunsky Energy study found that **Canadian provinces that have ZEV standards in place have the highest numbers of EVs and the most diversity in EV makes and models available**. In 2019, British Columbia and Quebec reached 10% and 7% market share, respectively, compared to a 3.5% market share nation-wide. The two provinces also accounted for 78% of Canada's total zero-emission vehicle inventory and 80% of total EV sales.

- A phased-in ZEV standard that aligns with Canada's ZEV sales targets will send **clear policy signals and provide automakers the predictability they need** for long-term planning and investment decisions.

- Experience from other ZEV standard jurisdictions to-date prove that **EV sale requirements are possible and not "too onerous" for automakers to meet**.
  - Results for Quebec's first compliance year show that all manufactures complied, **with several manufacturers greatly outperforming the standards**. In fact, 70% of

manufacturers—including General Motors, Honda, and Toyota—collected more than double the number of credits they needed. As the upfront cost of EVs continues to drop, meeting sales requirements will get easier still. Bloomberg New Energy Finance projects that **price parity between EVs and internal combustion vehicles will be reached by the mid-2020s.**[4]

- Finally, developing a ZEV standard **does not require direct government expenditure**, in contrast to some of the other policies available to increase EV uptake.[5]

POLICY DESIGN

As the federal government considers a ZEV standard, the following policy design options should be considered:

- **Call the policy a Zero Emission Vehicle Standard, similar to California, and not a ZEV "mandate."** This language communicates that the federal standard would act as a backstop or minimum standard, allowing for provinces to take their own approaches. It is also consistent with the language used by the Ontario Court of Appeal in its carbon pricing reference case decision, which held that the federal government has the power "to establish minimal national standards to reduce GHG emissions."

- **Enact a new regulation under the *Canadian Environmental Protection Act (CEPA)*,** making the Minister of Environment and Climate Change responsible for administering the ZEV standard. We recommend this approach for several reasons:
    - The *Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* were enacted under *CEPA* and a ZEV standard is a similar policy.
    - The Minister of Environment and Climate Change is one of the Ministers tasked with working to achieve Canada's ZEV sales targets (along with the Ministers of Transport, Natural Resources, and Innovation, Science and Economic Development).
    - The federal government could move more quickly towards implementation, without needing to craft and pass new legislation.
    - Other jurisdictions have housed their ZEV standards under environment ministries and departments. Quebec's ZEV standard is administered by the Minister of Environment and California's ZEV standard is administered by the California Air Resources Board.
    - **Alternatively, the federal government could explore the potential to create a new regulation under the *Motor Vehicle Fuel Consumption Standards Act*,** which was

[4] Although Bloomberg New Energy Finance expects there will be some geographical variation in exact dates.
[5] Current EV purchase incentives are estimated to cost the government approximately $430 per EV sold between 2018 and 2040 and current public charging programs cost the government $525 per EV adopted between 2018 and 2040.

replaced by the *Passenger Automobile and Light Truck GHG Regulations*, but is technically still intact and administered by the Minister of Transport.

- **Emphasize that the primary purpose of the standard is to reduce greenhouse gas emissions and improve air quality** (by increasing EV uptake through greater supply).

- **Treat the federal ZEV standard as a "backstop" for provinces without ZEV standards.** This approach would attract support from British Columbia and Quebec, who already have ZEV standards in place. It would also respect provincial autonomy and offer provinces the flexibility to design their own approaches, again making the standard more likely to stand up to a constitutional challenge. Provincial equivalency agreements would likely be required.

- **Couple the ZEV standard with renewed, means-tested/sliding scale purchase incentives, EV infrastructure funding, and an auto industrial strategy.** A package of EV-supportive policies will address the barriers to uptake from a supply and demand side, while also strengthening the auto sector's competitiveness and ensuring Canada captures a piece of the pie in the global shift to zero-emission vehicles.

BENEFITS

A phased-in national zero-emission vehicle standard would offer a range of benefits.

- **Provide Canadian consumers with more choice.** A ZEV standard will ensure greater availability of ZEVs at more affordable prices. The International Energy Agency estimates that 279 electric vehicle models were available globally. Only about 40 of these models are currently available in Canada.[6] Regions with ZEV standards have more ZEV models available and higher ZEV sales than other regions.[7]

- **Cost-savings for Canadians.** Switching to zero-emission vehicles saves Canadians money. One analysis concluded that battery electric vehicles save Canadian households on average about 71% in fuel and maintenance costs. This translates into 10 years household savings ranging from $23,000 to $36,000, or vehicle lifetime savings of $27,000 to $38,000 depending on which province they are used in.

- **Reduce illness and death-causing tailpipe emissions.** Health Canada estimates that 14,600 premature deaths were linked to air pollution in 2019. Getting more Canadians in zero-emission vehicles would reduce local air pollutants, such as particulate matter and nitrogen oxides, since zero-emission vehicles produce no tailpipe pollution.

[6] For comparison, there were over 250 light-duty vehicle models available for purchase in Canada in 2019.
[7] Other supportive policies, such as purchase incentives, also play a role.

- **Cut carbon emissions.** Research shows that supply-focused policies such as ZEV standards can play a crucial role in achieving long-term ZEV sales and GHG reduction targets. Another study modeling the GHG emissions impacts of replacing conventional vehicles with electric vehicles in British Columbia, Alberta, and Ontario concluded that EVs will result in 34-98% lower emissions from "well-to-wheel" in the near-term, depending on which province the shift happens in, and 46% to 87% lower emissions by 2050.

- **Align with leading North American provinces and states.** In addition to Quebec and British Columbia, eleven U.S. states have adopted a ZEV standard: California, Connecticut, Maine, Maryland, Massachusetts, New York, New Jersey, Oregon, Rhode Island, Vermont and Colorado. Together, these represent about 30 percent of new car sales in the U.S.

- **Deliver a future that Canadians want to see.** A March 2019 poll by Abacus Data and Clean Energy Canada found that two-thirds of Canadians want EVs to become the majority of vehicles sold in Canada and about half of them would like to see this shift happen in five years or less.

- **Build resilience in Canada's auto sector.** A national ZEV standard will require Canada's auto industry to innovate and move more aggressively towards electrification, strengthening the industry's competitiveness in the global economy. Recent projections by Navius Research show that Canada's zero-emission vehicle industry could support 1.1 million jobs and a GDP of $152 billion by 2040 if Canada reaches its ZEV sales targets. And these projections do not assume or incorporate any major EV or battery manufacturing activity, which could see the employment and economic benefits rise to much higher levels.
    - Unifor President Jerry Dias has stated publicly that Canada's automotive industry is at "a crossroads" and that, "... the bottom line is the government is going to have to get serious. **We're looking at a transformation of the industry.**"

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APPENDIX A: Countries with ZEV standards or similar policies in place

The following table lists the top 15 countries by vehicle production and indicates which have adopted ZEV standards or other similar policies that aggressively drive electric vehicle supply.

Rank	Jurisdiction	Vehicle Production	ZEV Standard or Similar Policy
1	China	25.5 million	New-Energy Vehicle (NEV) mandate.
2	U.S.	11 million	Eleven states accounting for about a third of annual new cars sales in the U.S. have a ZEV standard. (California, Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont)
3	Japan	9.2 million	Japan has adopted the world's most progressive fuel economy standards, both in terms of stringency and timeframe (2030).
4	Germany	5.1 million	The European Commission includes voluntary ZEV targets as a compliance pathway under its post-2021 corporate average CO2 standards. These are some of the most stringent vehicle emission standards in the world, effectively requiring a certain % of ZEV sales in order to achieve compliance. As a ZEV Alliance member, Germany has committed to 100% electric vehicle sales by 2050.
5	India	4.7 million	
6	South Korea	4 million	
7	Mexico	3.9 million	

8	Spain	2.8 million	The European Commission includes voluntary ZEV targets as a compliance pathway under its post-2021 corporate average CO2 standards. These are some of the most stringent vehicle emission standards in the world, effectively requiring a certain % of ZEV sales in order to achieve compliance. Spain introduced a draft law requiring 100% EV sales by 2040.
9	Brazil	2.7 million	
10	France	2.3 million	The European Commission includes voluntary ZEV targets as a compliance pathway under its post-2021 corporate average CO2 standards. These are some of the most stringent vehicle emission standards in the world, effectively requiring a certain % of ZEV sales in order to achieve compliance. Feebate/bonus malus system. Law prohibiting the sale of fossil fuel passenger cars and light-duty commercial vehicles by 2040.
11	Thailand	2.2 million	
12	Canada	2 million	
13	Russia	1.7 million	
14	U.K.	1.6 million	Plan to phase internal combustion engine vehicles out that was initially targeting 2040 but is now being moved forward to 2035. UK Committee on Climate Change recently recommended that the UK adopt a national ZEV standard in its 2020 progress report: "Introduce a ZEV mandate requiring increasing shares of sales to be zero-carbon, reaching 100% by 2032 at the latest to support earlier phase out of ICE vehicles, strengthen investment signals for

			manufacturers and ensure enough vehicles are supplied.”
15	Iran	1.5 million	