

*33<sup>nd</sup> Electric Vehicle Symposium (EVS33)  
Portland, Oregon, June 14 - 17, 2020*

## **Driving transportation electrification forward - Quebec's success in leading transportation electrification in Canada -**

Marilou Gosselin<sup>1</sup>

<sup>1</sup> *Ministère de l'Environnement et de la Lutte contre les changements climatiques, 675, boul. René-Lévesque Est,  
Quebec, Quebec, G1R 5V7, Canada (email: marilou.gosselin@environnement.gouv.qc.ca)*

---

### **Summary**

With 66,373 light-duty electric vehicle (EV) registered on December 31, 2019, which constitutes 43 % of the EV on Canadian roads, the province of Quebec leads the country even though its yearly new vehicle sales are approximately 23 % of the Canadian market. This success is due to a clear governmental vision declined through a robust set of consistent policies, various incentive programs and a zero-emission vehicles (ZEV) mandate implemented in January 2018 to assure the EV supply. Active in international forums and alliances, Quebec leads by example and announced in June 2019 its desire to go even further in developing a 2020-2030 Electrification and Climate Change Framework Policy.

*Keywords: electric vehicle (EV), mandate, policy, government, regulation*

---

## **1 Quebec's actions towards transport electrification**

Quebec's energetic profile consists of 99.9% of renewable sources, available through a nationalized utility provider. Electrifying the transportation sector is therefore strategic and a smart use of its clean electricity, reduces its dependence on foreign oil, improves air quality and public health and also benefits the economy by stimulating industries active in the sector.

### **1.1 Implemented policies and programs**

The government of Quebec made engagements and acted towards the electrification of transportation in several policies and programs, among others the 2013-2020 Climate Change Action Plan, the 2015-2020 Transportation Electrification Action Plan [1], the 2030 Energy Policy and its 2018-2023 Energy transition, Innovation and Efficiency Master Plan and the 2030 Sustainable Mobility Policy. These policies include various measures to sustain EV demand, such as subsidies for the purchase of new or used vehicles, support for the installation of charging stations in the home or the workplace, the access to high-occupancy vehicle traffic lanes, selected tolls or ferries free of charge to EV drivers, education campaigns, etc. It also implemented a ZEV mandate similar to the one in operation in ten American states to insure the EV supply [2]. On March 10, 2020, the government announced, in its 2020-2021 Budget Speech, a 6,2 billion dollar investment over 6 years for the first implementation plan of its future Electrification and Climate Change Framework Policy [3]. Of that amount, 1,4 billion dollars is notably projected for EV incentives.

## 1.2 Support to the transport electrification industry

In 2016, the ground transportation industry in Quebec had 620 businesses employing nearly 30,000 people [4]. Quebec has many strengths and a wide range of expertise enabling it to play an important role in the electrification of transportation, particularly in the electric vehicle sector, charging stations and technologies, batteries, energy storage, artificial intelligence, smart grids and exploration and exploitation of strategic minerals. The research and development sector is also very active, with, notably, over 30 research centres working on transport electrification. The government of Quebec supports these industries and the actions aiming towards innovation and technological advancements through various investments, programs and initiatives. Among others, it supported the development of heavy-duty and utility electric vehicles through joint ventures, and contributes to the financing of Propulsion Quebec, a dynamic cluster for electric and smart transportation.

## 1.3 Consistency in the governmental vision

The support in favour of the electrification of the transportation sector has been constant in the Quebec government since 2011, through three general elections and three different political parties in power. The Quebec National Assembly's vote towards the passage of the ZEV Act, on October 26, 2016, was unanimously in favour of the motion. It gives a clear signal to both the consumers and the industry of its dedication on this issue.

## 1.4 Participation in international forums and alliances

Among California and the Netherlands, Quebec is a founding member of the International Zero-Emission Vehicle Alliance (ZEV Alliance) that seeks to collaborate with other governments to expand the global ZEV deployment, and that now counts eighteen members [5]. It is also active in the Under 2 Coalition, and has engagement through the Global Climate Action Summit, Katowice's "Driving Change to Zero" declaration and CALSTART's "Drive to Zero" pledge.

## 2 Leading the Canadian EV market

With 23 % of the Canadian population and 23 % of its yearly light vehicle sale, Quebec is a leader with 43 % of the EV on the road in the country.

Table 1: Registered EV by Canadian Province or Territory on September 30, 2019 [6]

Province or Territory	Approximate total of EV registered
Quebec	59,000*
Ontario	41,300
British Columbia	31,000
Alberta	3,200
Manitoba	600
Nova Scotia	350
Saskatchewan	300
New Brunswick	300
Newfoundland-Labrador	75
Prince Edward's Island	75
Northwest Territories	10
Yukon	10
Nunavut	1
Total Canada	136,221

\* The Quebec registration database indicates a total of 60,861 EV on September 30, 2019

Since March 2015, the yearly annual growth of the total number of EV registered in Québec has averaged 66 %. Between December 31, 2018, and December 31, 2019, the increase was of 70 %, to reach a total of 66,373 registered electric vehicles. It constitutes 1,3 % of the total light vehicle fleet.

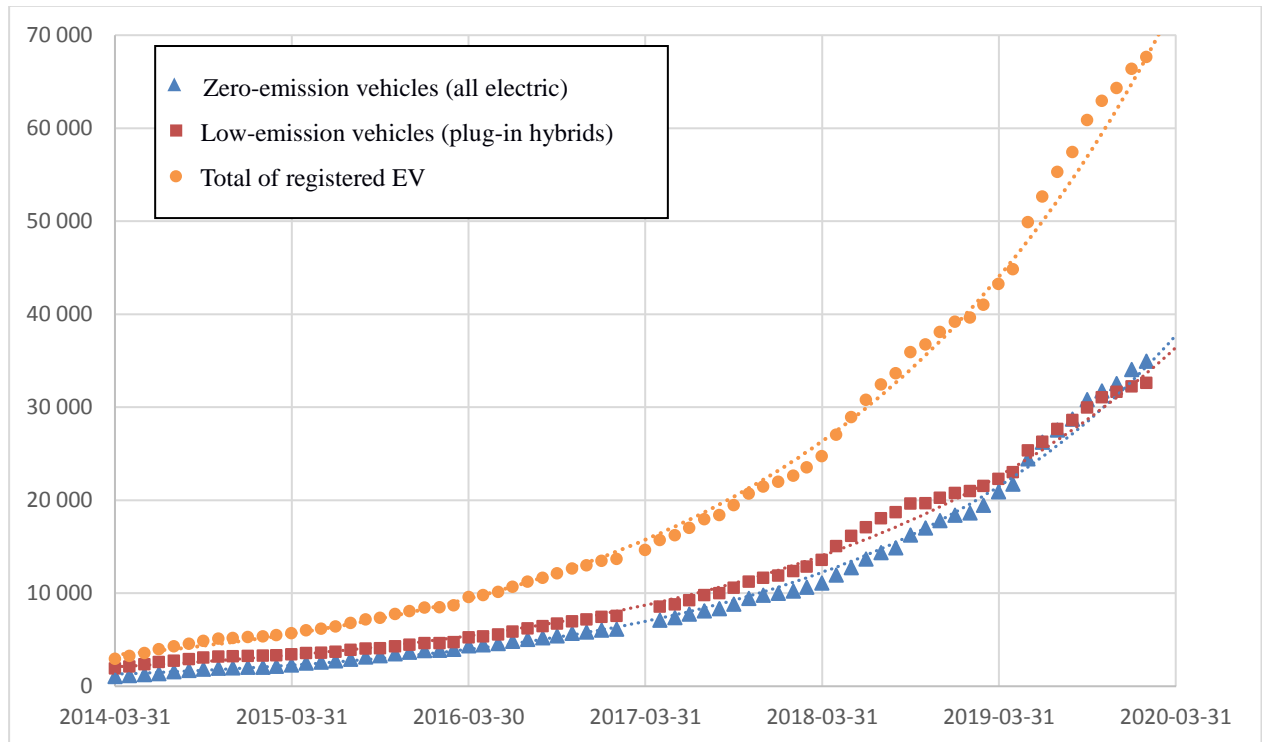


Figure 1: Evolution of the number of registered EV in Quebec between March 2014 and January 2020

## 2.1 Exemplarity

With over 5,390 stations on December 31, 2019 [7], Quebec has the most important public charging network in Canada. The government of Quebec also has the largest public EV fleet. In April 2017, an incentive program for used EV generated a lot of interest internationally. Quebec was also the first jurisdiction to give, through its ZEV mandate, credits for used vehicles. Following its example, British Columbia became the second Canadian province to announce, in November 2018, the implementation of a ZEV mandate [8].

## 3 Results of the first ZEV mandate compliance period

The ZEV mandate's first obligations were for light-duty vehicles of model year 2018. Automakers selling or leasing on average above 4,500 vehicles per year were required to earn credits through the sale or lease of ZEV (all-electric vehicles) and low emission vehicles (LEV, consisting mainly of plug-in hybrids) in the Quebec market. To determine the requirements applicable to each of the motor vehicle manufacturers subject to the Act, the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC) uses the average vehicle sales for model years 2014, 2015 and 2016, to which it applies the percentage of credits required by regulation for model year 2018 (3.5%), applicable both to large and intermediate manufacturers [2]. As shown in Table 2, all of the regulated automakers respected the 2018 obligations, either through sales of their own vehicles or by buying credits from other manufacturers. A total of 58,903.22 credits were accumulated through the sale of 34,144 new vehicles and 609 reconditioned vehicles of model years 2014 to 2018, reported by 14 motor vehicle manufacturers [9]. The figures in Table 2 take into account the 17,041.39 credits that were transferred from one automaker to another, through a total of seven transactions between seven vehicle manufacturers.

Table 2: Categories of motor vehicle manufacturers and number of credits that they accumulated for the first compliance period, on September 1, 2019 [9]

Category of vehicle manufacturer	Credits accumulated in first compliance period	Requirements	Remaining credits
<b>Large</b>			
General Motors Canada	16,802.98	1,497.93	15,305.05
Ford Canada	3,340.42	1,729.56	1,610.86
FCA Canada	1,897.61	1,775.84	121.77
Honda Canada	8,312.09	1,616.11	6,695.98
Hyundai Canada	1,602.39	1,275.16	327.23
Kia Canada	2,850.27	903.63	1,946.64
Mazda Canada	2,400.00	1,008.42	1,391.58
Nissan Canada	7,285.94	1,268.68	6,017.26
Toyota Canada	5,667.65	1,832.69	3,834.96
Volkswagen Canada	1,859.47	1,000.15	859.32
<b>Intermediate</b>			
BMW Canada	864.29	310.49	553.80
Mercedes-Benz Canada	832.39	335.94	496.45
Subaru Canada	2,200.00	539.71	1,660.29
Mitsubishi Canada	2,302.22	282.65	2,019.57
<b>Small</b>			
Porsche Canada	155.33	N/A	155.33
Tesla Canada	530.17	N/A	530.17
<b>Total</b>	<b>58,903.22</b>	<b>15,376.96</b>	<b>43,526.26</b>

The accumulated credits came from the sales of five model years of vehicles, as illustrated in Fig. 2.

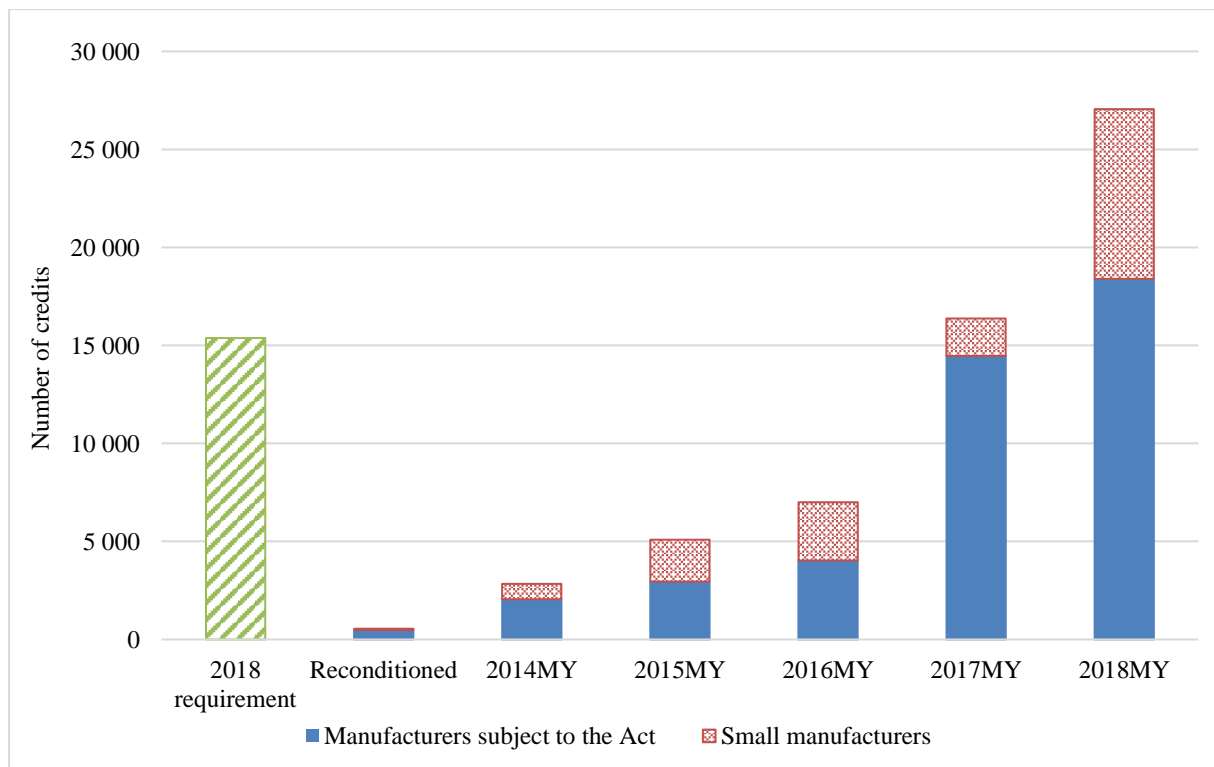


Figure 2: Requirements and source of credits for the first compliance period

## 4 Developing a plan for the future

To achieve its goal of an overall GHG reduction of 37.5 % in 2030 in relation to 1990, and an objective of minus 80 % to 95 % in 2050, electrifying Quebec's economy, and in particular its transportation sector, makes sense. That is why the Environment and Fight Against Climate Change minister announced on the 18th of June 2019, a major consultation project to develop the next Electrification and Climate Change Plan [10]. A preliminary financial framework for the policy was announced on March 10, 2020, projecting investments of 6,2 billion dollars over 6 years for its first implementation plan, expected in the fall of 2020 [3].

The Québec ZEV Standard put into force in January 2018 mostly mirrors the American standard present in California and 10 other states. It ensured coherency in the measures in place in the North American market as the electrification of transportation developed. It has to be noted that the Québec ZEV Act and its regulations are independent legislative entities, and are not impacted by the current dispute between the Californian and American Federal governments. The Québec ZEV mandate also has exclusive particularities, including offering – under conditions - credits for used vehicles that are first registered in the province, the presence of compliance periods, and the ability to limit the use of excess credits between periods. Due to the change in the EV market, where sales hold strong and vehicles with long electric ranges are more available - which results in more credits for the automotive industry than predicted – a strengthening of the ZEV Standard is expected to be an objective of the future 2020-2030 Electrification and Climate Change Framework Policy.

This policy will guide Quebec's action for the next decade, and will propose pragmatic, effective and measurable measures to electrify its future and that will benefit the economy. It will also enable Quebec to remain a leader in transport electrification and in the fight against climate change.

## Acknowledgments

Assistance provided by my colleagues and superiors in the redaction of this communication, but also in our common pursuit of crafting constructive and coherent policies, was greatly appreciated.

## References

- [1] Gouvernement du Québec, ministère des Transports du Québec: *Transportation Electrification Action Plan 2015-2020 - Propelling Quebec forward with Electricity*, ISBN 978-2-550-73272-3, 2015, [https://www.transports.gouv.qc.ca/fr/ministere/role\\_ministere/electrification/Documents/PAET.pdf](https://www.transports.gouv.qc.ca/fr/ministere/role_ministere/electrification/Documents/PAET.pdf) (in French), accessed on 2020-03-25
- [2] Ministère de l'Environnement et de la Lutte contre les changements climatiques, *The zero-emission vehicle (ZEV) standard*, <http://www.environnement.gouv.qc.ca/changementsclimatiques/vze/index-en.htm>, accessed on 2020-03-25
- [3] Gouvernement du Québec: *Budget 2020-2021 : Building a Green Economy – Electrification and Climate Change*, ISBN 978-2-550-86217-8, March 10, 2020, [http://www.budget.finances.gouv.qc.ca/budget/2020-2021/en/documents/Budget2021\\_Green\\_Economy.pdf](http://www.budget.finances.gouv.qc.ca/budget/2020-2021/en/documents/Budget2021_Green_Economy.pdf), accessed on 2020-03-25
- [4] Gouvernement du Québec: *Plan d'action pour l'industrie du transport terrestre et de la mobilité durable 2018-2023*, ISBN 978-2-550-81453-2, 2018, [https://www.economie.gouv.qc.ca/fileadmin/contenu/documents\\_soutien/secteur\\_activites/transport/plan\\_action\\_mobilite\\_durable\\_2018-2023.pdf](https://www.economie.gouv.qc.ca/fileadmin/contenu/documents_soutien/secteur_activites/transport/plan_action_mobilite_durable_2018-2023.pdf) (in French), accessed on 2020-03-25
- [5] *ZEV Alliance - Members*, <http://www.zevalliance.org/members>, accessed on 2020-03-25
- [6] Electric Mobility Canada, *Electric Vehicle Sales in Canada – Q3 2019*, [https://emc-mec.ca/wp-content/uploads/EMC-Sales-Report-2019-Q3\\_EN\\_v2.pdf](https://emc-mec.ca/wp-content/uploads/EMC-Sales-Report-2019-Q3_EN_v2.pdf), accessed on 2020-03-25
- [7] Association des véhicules électriques du Québec, *Statistiques SAAQ-AVEQ sur l'électromobilité au Québec en date du 31 décembre 2019*, <https://www.aveq.ca/actualiteacutes/statistiques-saaq-aveq-sur-lelectromobilite-au-quebec-en-date-du-31-decembre-2019-infographie> (in French), accessed on 2020-03-25

- [8] Office of the Premier of British Columbia, *Provincial government puts B.C. on path to 100% zero-emission vehicle sales by 2014*, <https://news.gov.bc.ca/releases/2018PREM0082-002226>, accessed on 2020-03-25
- [9] Ministère de l'Environnement et de la Lutte contre les changements climatiques, *Report on the ZEV Standard as of September 1, 2019*, to be published on the zero-emission vehicle (ZEV) standard page, <http://www.environnement.gouv.qc.ca/changementsclimatiques/vze/index-en.htm>
- [10] *Minister Benoît Charette announces an unprecedented process to develop the forthcoming Electrification and Climate Change Plan*, [http://www.environnement.gouv.qc.ca/infuseur/communiqu\\_e\\_en.asp?no=4182](http://www.environnement.gouv.qc.ca/infuseur/communiqu_e_en.asp?no=4182), accessed on 2020-03-25

## Author



Marilou Gosselin has been working in the transportation sector for Quebec's Ministry of Environment and Fight against Climate Change for 17 years. She coordinates the ministry's transportation team in the Program and Mobilization Direction, that is responsible, among other programs and regulations, of Quebec's zero-emission vehicles mandate. Her educational background is a baccalaureate in Microbiology, a master's degree in Civil Engineering and a certificate in Education from Laval University in Quebec City.