In 2020, Québec, which owns clean energy available in large quantities and at a competitive cost, will be a leader in the use of electric-powered means of transportation and a forerunner in the realm of sustainable mobility.
A WORD FROM THE PREMIER

PHILIPPE COUILLARD

The world’s fourth largest producer of hydroelectric power, Québec has a source of clean, renewable energy, a reliable distribution system and recognized expertise. In 2011, Québec released its 2011-2020 action plan for electric vehicles under the Jean Charest government. The plan, which was taken up by the previous government, has enabled us to take advantage of opportunities for industrial development and to reduce greenhouse gas emissions along with our reliance on fossil fuels.

Economic development and the fight against climate change are now integral to the creation of a prosperous and low-carbon economy. Québec has everything it needs to be an internationally recognized environmental leader and to showcase the many advantages that opting for non-polluting modes of transportation offer to our societies. That is precisely the objective of the Transportation Electrification Action Plan 2015-2020.

Many of the initiatives put forth under this Action Plan will be funded through the Fonds vert (Green Fund), whose revenues come from the carbon exchange with the state of California. This serves as further concrete proof that federated states, including Québec, are playing a major role in our collective struggle against climate change.

Implementation of this plan also contributes to the development of expertise within our labour force and our businesses here in Québec. Our know-how in the design and manufacturing of electric vehicle components, the creativity and talent of our entrepreneurs, along with research and the development of new approaches to innovation in this area, will lead to the creation of a green economy that generates high-quality jobs.

We therefore have much to gain in making this shift now. It is in our best interests to ensure Québec’s prosperity today and into the future.

PHILIPPE COUILLARD
Premier of Québec
The Transportation Electrification Action Plan 2015-2020 is a concrete expression of the gouvernement du Québec’s desire to consolidate the efforts that have been made in recent years with regard to electrification of the transportation sector. The plan’s objective is to build on Québec’s strengths in order to stimulate economic growth and reduce the part that the transportation plays in greenhouse gas emissions.

This mobilizing, structuring and responsible plan of action is a strong component of government action in the area of transportation electrification. It brings together new targeted initiatives designed to promote electric transportation, enhance cutting-edge expertise and build a dynamic industry that will help create prosperity and reduce our ecological footprint.

In creating an environment conducive to research and development, the Transportation Electrification Action Plan 2015-2020 represents a special opportunity for many small and medium-sized businesses in Québec to develop unprecedented expertise, a specialized labour force and innovative solutions for the sustainable transportation of people and goods.

Through this Action Plan, the government intends to increase the integration of electrical energy for all types of vehicles and change the image of transportation.

In short, this Action Plan is an invitation to members of the public, businesses and organizations within the transportation sector to participate in a wide-ranging social vision. A common effort will serve to enhance Québec’s environmental record along with the growth of an industry that holds great promise for future generations.
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INTRODUCTION

This document marks the release of the government’s *Transportation Electrification Action Plan 2015-2020*. The purpose of this plan is to promote electric transportation, to develop the industry associated with this economic sector and to create an environment conducive to the transition from gasoline- and diesel-powered vehicles towards electric vehicles. With that aim in mind, it proposes concrete and pragmatic measures based on the availability and the renewable nature of the electricity produced in Québec, as well as on our industrial know-how and the high calibre of our research expertise in the area of transportation electrification.

Québec intends to take advantage of the growth in the electric vehicles market and the strong potential for technological advancement that goes with it in order to reach its objectives. It is aiming to position itself as a global leader in transportation electrification by continuing the efforts undertaken through previous government initiatives to combat climate change by reducing greenhouse gas emissions (GHG emissions) and to decrease our reliance on oil and gas.\(^1\)

This initiative is part of a series of measures whose combined effects will enable Québec to achieve the objective set in its *2013-2020 Climate Change Action Plan*: a 20% reduction below the 1990 level by 2020.

In this context, the government is taking the necessary steps to bring together the conditions needed to ensure the success of transportation electrification, which include encouraging citizens and businesses to choose electric vehicles for their transportation needs. It will also consider the need to stimulate a culture of innovation in this area and to encourage all stakeholders to work together to achieve common objectives.

This Action Plan is the result of a collaboration among a number of ministries and agencies that are actively engaged in transportation electrification. A list of these stakeholders appears at the end of this document. The plan also includes a financial framework that reflects the government’s current fiscal capacity. The government will be investing just over $420 million, most of it from the *Fonds vert*, which is funded through the cap-and-trade system or “carbon market”.

The *Transportation Electrification Action Plan 2015-2020* presented in this document offers a mobilizing, structuring and responsible approach for all regions of Québec. It is based on a vision of the future that will contribute to the growth of Québec’s prosperity for the benefit of the population as a whole and of generations to come.

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TRANSPORTATION ELECTRIFICATION: A WISE CHOICE, NOW MORE THAN EVER

Since 2011, the gouvernement du Québec has been moving towards transportation electrification. This decision is based on a firm desire to make a major shift towards supporting the sustainable development of our economy and to combat climate change, a desire that has been reconfirmed a number of times. It is also based on the comparative advantages associated with Québec’s resources and expertise, which are assets we can always rely on.

There is no doubt that transportation electrification also goes hand in hand with business opportunities likely to foster economic development. The electric transportation market is in fact growing steadily and there is significant potential for technological development.

Now more than ever, this choice is an appropriate one, and there are a number of factors that support the government’s decision to promote transportation electrification, a trend that goes far beyond the manufacturing of electric vehicles. It is in fact part of a broader movement that entails rethinking what mobility means and that presents opportunities for innovation, both in the transportation equipment manufacturing industry and in a number of related sectors such as materials and electronics as well as information technology and communications.
Choosing transportation electrification is a matter of recognizing our assets: availability of renewable energy, an abundance of natural resources (including many of the metals needed to manufacture electric vehicles), internationally recognized research expertise and industrial know-how that are continually developing. Québec’s comparative advantages represent strengths that it can count on.
ELECTRICITY: AVAILABLE ENERGY FROM A RENEWABLE SOURCE

Over the last century, oil has dominated the transportation sector. Québec is dependent on this energy and needs to import large amounts of it. The use of electricity produced in Québec for transporting both people and goods can therefore:

> reduce fossil fuel consumption and the resulting GHG emissions;
> decrease oil imports, thereby reducing energy dependency and improving Québec’s balance of trade.

Québec is one of the world’s largest producers of hydroelectric power. Hydroelectricity is a clean, renewable and reliable source of energy that is available at a highly competitive price as compared with other sources of energy. With a capacity of 36,643 MW, Hydro-Québec, produces over 99% of its electricity from water. The utility also has a network that is already capable of supplying the power needed to charge a million electric vehicles.

AN ABUNDANCE OF THE NATURAL RESOURCES NEEDED TO MANUFACTURE ELECTRIC VEHICLES

Québec covers a vast territory of 1.7 million km², of which only 1% is developed. The earth is filled with many different resources, including industrial minerals and metals, some of which offer significant potential for growth in strategic sectors such as defence, communications, energy production and storage, and transportation: lithium, graphite, rare earth elements, cobalt, vanadium and niobium, among others.

In light of the sectors in which these substances are used and the economic importance of the industry that goes with them, countries such as the United States, China and Japan have established ways of securing their supply, thus obtaining a strategic economic advantage.

In the electric and hybrid vehicles sector, lithium, graphite, titanium, phosphates and cobalt are needed to produce the batteries used to propel them. In its efforts to minimize vehicle weight, the automotive industry creates and uses special alloys and composite materials, including niobium and vanadium.

Québec has large reserves of these substances, many years of experience in mining as well as world-renowned expertise in research and development in the manufacturing of the lithium-ion batteries used to power and propel electric cars.

Transportation electrification is an opportunity for Québec to make use of some of these natural resources and to develop mineral-related sectors. The government therefore intends to look at the various possibilities open to it in order to maximize the benefits of this economic activity.
HIGH-CALIBRE RESEARCH EXPERTISE IN TRANSPORTATION ELECTRIFICATION

The transportation electrification sector is able to rely on a solid research infrastructure at both the university and the college level as well as in the private sector. The key players are as follows:

Institut de recherche d’Hydro-Québec (IREQ) conducts research on materials used in batteries for the transportation sector and designs energy storage systems. IREQ holds over 800 patents and 40 licences internationally.

Institut du véhicule innovant (IVI) is an independent non-profit organization charged with managing a technology transfer centre affiliated with Cégep de Saint-Jérôme. IVI offers advanced expertise in the engineering and design of technological solutions, such as electrical, mechanical and mechatronic systems, prototyping, instrumentation, monitoring, certification and laboratory testing as well as testing under real-life conditions. Projects centre on electric, hybrid and driverless vehicles, vehicle intelligence and energy efficiency.

Centre des technologies avancées BRP – Université de Sherbrooke (CTA) gives the transportation industry access to industrial and university expertise as well as the necessary testing and simulation equipment to develop complete electric and hybrid propulsion systems. The CTA also works on reducing the weight of vehicle structures and on reducing noise and vibration. The centre’s work is eligible for certain types of university funding and focuses on mass production and marketing.

A CENTRE OF EXCELLENCE DEDICATED TO TRANSPORTATION ELECTRIFICATION AND STORAGE

Thanks to IREQ’s energy storage and conversion division, Hydro-Québec has an international reputation for its technological expertise and its intellectual property portfolio, including with regard to lithium-ion, lithium-sulphur and lithium-air batteries.

In order to consolidate its position as a global leader in research on battery materials, to establish partnerships with industry and to expand its patent portfolio, Hydro-Québec is hoping to set up a centre of excellence for transportation electrification and energy storage that would be overseen by Karim Zaghib, an internationally renowned expert.

This centre of excellence would bring together the business and research communities in order to accelerate the development of energy storage, establish a culture of open innovation, further technology transfer and help create jobs in Québec.
PMG Technologies has been conducting research and compliance testing on electric and innovative vehicles for governments and manufacturers for over 10 years. The company, which manages Transport Canada’s only automotive research and testing centre, has leading-edge facilities that are among the most modern in North America. These facilities earned PMG recognition as the most accurate test laboratory in the world in 2012.

Institut de recherche sur l’hydrogène (IRH) at Université du Québec à Trois Rivières brings together researchers looking at fuel cells as an energy source for electric vehicles.

Performance Innovation Transport (PIT) - An FPInnovations group offers tailor-made technology solutions and assistance to vehicle fleet managers who want to reduce the costs and the environmental impacts of their operations or improve security.

The sector can also count on a world-class research and innovation capacity in fields relating to electric transportation and future modes of transportation (intelligent, driverless): microelectronics (C2MI MiQro Innovation Collaborative Centre), optic and photonic solutions (Institut national d’optique [INO]), light materials (National Research Council Canada [NRC], Aluminium Technology Centre [CTA]), onboard electronics (Université de Sherbrooke) and information technology (Computer Research Institute of Montréal [CRIM]).

Electric transportation is a thriving sector in which the potential for technological innovation is still wide open and in which there is a growing market.

QUÉBEC’S RECOGNIZED EXPERTISE: THE EXAMPLE OF THE ELECTRIC SHUTTLE AT THE CALGARY AIRPORT

In late 2013, the Calgary airport issued an international tender call for the development and construction of a compact electric transportation system composed of 20 electric shuttles with a unique design that could accommodate 10 passengers. This was a significant challenge, because the shuttle had to be designed, a prototype produced, testing carried out and 20 shuttles delivered in less than 30 months!

Not many companies in North America had the expertise to take on this challenge. PIT, an FPInnovations group, brought together four Québec partners (Précicad, Kargo, Institut du véhicule innovant and Deutschman Design) to create a multidisciplinary and complementary team to prepare a successful bid.

This compact transportation system is of vital importance to the Calgary airport, because it is part of a project worth over $2 billion and will carry 50% of the 14.4 million passengers expected each year. Most of the supply chain for the shuttle – for chassis components, seats and body panels, for example – is accounted for by Québec businesses, in addition to the five main partners.

Building on this successful experience, FPInnovations intends to use the same platform to produce a fully driverless electric shuttle.
RECOGNIZED INDUSTRIAL EXPERTISE IN THE DESIGN AND MANUFACTURING OF ELECTRIC VEHICLE COMPONENTS

Québec is able to rely on a strong industrial foundation in land transportation that represents over 31,000 direct and indirect jobs at 650 different companies, including a number of world-class leaders such as Bombardier Transport, Paccar, Bombardier Produits Récréatifs, Nova Bus and Prévost Car.

With regard to the manufacturing of land transportation equipment, Québec is recognized for its expertise in niche sectors, such as commercial vehicles (buses, coaches), industrial vehicles (trucks), utility trucks (bucket trucks, garbage trucks), service vehicles (ambulances, police vehicles), special vehicles (armoured trucks) and vehicles for recreational use (motorcycles, snowmobiles, three-wheel sports vehicles).

In the more specialized field of electric transportation, there are approximately 30 businesses operating in this sector, offering close to 1,300 jobs.

Investing in transportation electrification enables Québec to draw on a number of areas of advanced expertise in order to build a dynamic and forward-looking industry that generates prosperity. The development potential is enhanced by the fact that, along with the growth in electric vehicles, partially and fully driverless vehicles are predicted to arrive on the scene within the next decade. Most of these vehicles incorporate technologies present in electric vehicles. In opting for electrification today, the government is planning for the future.

2. 2012 MEIE data.
3. Idem.
PRINCIPAL COMPANIES THAT DESIGN AND MANUFACTURE COMPONENTS FOR ELECTRIC VEHICLES IN QUÉBEC

**ADDÉNERGIE** designs, manufactures and operates charging solutions for electric vehicles for all segments of the market (institutional, commercial, industrial, residential, multi-residential, etc.). AddÉnergie is the supplier for the two largest charging station networks in Canada: Electric Circuit and VERnetwork. The company employs some 40 people.

**B3CG INTERCONNECT** is a manufacturing business with approximately 200 employees, including 120 at its plant in Saint-Eustache, Québec, which specializes in cable assemblies, harnesses and complex electromechanical assemblies. B3CG also offers specialized battery assembly services geared to vehicle manufacturers’ needs.

**ELMEC** is a company that specializes in the design and manufacturing of electromechanical, electronic and web application systems. It manufactures charging stations for residential, commercial and industrial use. The company employs about 20 people.

**JOHNSON MATTHEY MATÉRIAUX DE BATTERIE** (formerly Clariant Canada inc. and Phostech Lithium inc.) produces lithium iron phosphate (LFP) for the lithium ion batteries used in the different types of electric vehicles and in stationary energy storage applications. Because of its expertise, the company is able to manufacture materials that meet the high purity standards of battery manufacturers. These materials are sold around the world. The company employs over 70 people in Québec.

**LTS MARINE** designs and manufactures electric drive trains for the water sports industry. The team offers a range of integrated solutions designed for many types of boats, from those intended for water sports to pontoons. The company sells its products throughout North America.

**SOLUTION BLEUES CANADA** (formerly Bathium) is a manufacturing business that specializes in research and development as well as in the manufacturing of lithium metal polymer batteries for light-duty vehicles and stationary energy storage applications. The company has 160 employees.

**TM4**, a Hydro-Québec subsidiary, has a staff of 130 who design and manufacture electric motors. These innovative systems are marketed around the world.

**VARITRON** offers a full range of electronic assembly services for electric vehicles and for the medical, military and automotive sectors as well as the energy, telecommunications and aerospace industries. With more than 300 employees at its three plants (two in Québec and one in the greater Boston area), Varitron is the largest integrated electronics manufacturer in Québec.
AN ECONOMIC SECTOR TO BE DEVELOPED

Electric vehicles are an effective way of meeting the increasingly stringent requirements of governments with regard to GHG emissions.

Aside from the fact that all-electric vehicles produce few if any polluting emissions, they present a number of other advantages from the standpoint of reliability, power, maintenance costs and driving pleasure. Those advantages, combined with the fact that unpredictable fluctuations in oil prices are not an issue, are definitely attractive to various types of customers, for commercial vehicles in particular.

A number of Québec companies are already engaged in producing this type of vehicles and their components.

Most of the major automakers have a presence in the electric vehicle market, but the number of models they offer remains limited. Others are slow in entering this market, creating space for new arrivals, in niche markets in particular, in both the automotive and the heavy truck sectors. Tesla, a new electric car manufacturer, is a good example of this.
Québec businesses are already up to the challenge. They have the ability and the expertise to compete in certain markets, including low-volume production of specialized vehicles.

There is also good market potential for batteries, as energy storage is a crucial element of the electric vehicle sector. Through a combination of resource availability and leading-edge expertise, Québec has everything it needs to develop this sector.

**ILLUSTRATIONS OF ALL-ELECTRIC VEHICLES DESIGNED BY QUÉBEC BUSINESSES**

1. **Précicad**  
   A modular industrial vehicle (Kargo)

2. **Lito Green Motion**  
   A motorcycle (SORA)

3. **Nova Bus**  
   A transit bus (LFSé)

4. **Lion Bus**  
   A school bus (eLion)

5. **Pedno SCP89**  
   A mining vehicle (Minautor)

6. **Bombardier Produits Récréatifs inc. (BRP)**  
   A 3-wheel motorcycle (Can-Am Spyder)

A MOBILIZING, STRUCTURING AND RESPONSIBLE PLAN OF ACTION FOR QUÉBEC
In light of its commitment to transportation electrification over the past number of years, Québec has made a name for itself and is playing a strong leadership role in this area. Today, close to half of all plug-in electric and hybrid passenger cars sold in Canada are sold in Québec. Support for research and development in this growth industry has enabled it to acquire recognized expertise around the world. A significant amount of effort has gone into securing this enviable position.

A SOLID FOUNDATION

The government has shown its strong commitment to transportation electrification since 2011 through such measures as the Roulez électrique (Drive Electric) program, which supports vehicle purchases, and Branché au travail, a program that encourages the installation of electric charging stations at businesses.

Access to charging stations has also been made easier by Hydro-Québec’s Electric Circuit network, which currently comprises over 450 stations in Québec. This is the largest network of public charging stations in Canada. In addition, a charging station corridor with six recharging sites (including five with fast charging stations) has been set up along autoroute 40 between Québec and Montréal. The network also includes the Québec-Vermont cross-border corridor between Montréal and Montpellier, a distance of over 210 km.

In a promising development, steps have also been taken to allow electric vehicles to use the reserved lane on autoroute Robert-Bourassa in the city of Québec.

Since 2011, there has been a total of nearly $200 million in private investment in the electric transportation industry, resulting in the creation of some 300 new direct jobs.

These choices and investments are important measures in support of transportation electrification. That said, this Action Plan differs from the previous ones in that it offers concrete, tangible solutions that can be implemented in the near future and that the public can access in day-to-day life.
A VISION FOR THE FUTURE

Transportation electrification represents a way for Québec to set itself apart by promoting important values such as respect for the environment, collaboration and knowledge as well as the desire to enhance the public’s prosperity and well-being.

The vision set out in the Transportation Electrification Action Plan 2015-2020 is based on these fundamental principles:

In 2020, Québec, which owns clean energy available in abundance and at a competitive cost, will be a leader in the use of electric-powered means of transportation and a forerunner in the realm of sustainable mobility.
With this Action Plan, the government has set the following objectives:

1. **INCREASE**
   the number of electric vehicles in Québec’s fleet.

2. **TAKE PART**
   in the fight against climate change and in the reduction of greenhouse gas emissions.

3. **REDUCE**
   oil dependence and therefore improve Québec’s trade balance.

4. **CONTRIBUTE**
   to Québec’s economic development by banking on a promising industry and using the electric energy available in Québec.
MORE SPECIFICALLY, THE FOLLOWING TARGETS HAVE BEEN SET FOR 2020

Reach 100 000 plug-in electric and hybrid vehicles registered in Québec.

Reduce the annual GHG emissions produced by transportation by 150 000 tonnes.

Reduce by 66 millions the number of litres of fuel consumed annually in Québec.

Reach 5 000 jobs in the electric vehicle industry and bring about investments for a total of $500 million.

Reaching these very ambitious targets is a step towards an even higher target of 300 000 electric vehicles by 2026.

The ability to reach the target of 100 000 electric vehicles is influenced by a variety of external factors, such as gas prices and the availability and cost of vehicles. The government is therefore opting for a collaborative approach and structuring initiatives in order to increase the number of zero-emission vehicles (ZEVs). The strategic partnership between Québec and its various partners in the fight against climate change will also lead to the adoption of a common, coherent approach with a view to facilitating the transition towards a low-carbon economy. This approach could ultimately result in the adoption of a ZEV standard.
CONDITIONS FOR SUCCESS

To achieve these targets and maintain its position as a leader in transportation electrification, Québec will need to take a number of steps, including the following:

ENCOURAGE the public as well as businesses to opt for electric vehicles to meet their transportation needs. To that end, it will be important to bear in mind that the cost of purchasing an electric vehicle is still high as compared with a gas-powered one, that the choice of models available is currently limited and that technology-related concerns remain, with regard to the autonomy of electric vehicles in particular.

INCREASE the potential for research in an emerging technology and develop an innovative electric transportation industry that is able to compete on global markets. The fact that Québec’s industrial fabric is largely composed of small and medium-sized businesses (SMEs) is an important consideration in this regard.

CREATE an environment that is conducive to electric transportation by ensuring that ministries and agencies are working together to ensure consistency, through the regulatory framework in particular, to facilitate attainment of the objectives in the Action Plan.

The Action Plan sets out measures for ensuring these conditions are met.
POLICY DIRECTIONS AND SPECIFIC MEASURES

The Action Plan comprises 35 different measures. It centres on three policy directions based on the challenges and objectives to be met.
1. Promote Electric Transportation
2. Develop the Industry
3. Create a Favourable Environment
POLICY DIRECTIONS AND SPECIFIC MEASURES

1

PROMOTE ELECTRIC TRANSPORTATION

In 2012, the largest percentage of GHG emissions in Québec – 44.7% – was produced by the transportation sector. From 1990 to 2012, GHG emissions in this sector grew by 25.7%, while emissions in other sectors fell by 24.3% during the same period.5

Transportation is also one of the major sources of air pollution in cities. A number of different types of contaminants that have harmful effects on public health are found in the air. In 2008, transportation accounted for over 75% of nitrogen oxide emissions, 37% of volatile organic compound emissions and just under 12% of total particulate matter emissions in Québec.6

The government therefore intends to encourage the public and businesses to consider alternatives to gas-powered vehicles for their transportation needs as a way of reducing fuel consumption and GHG emissions. To that end, it has undertaken a variety of initiatives relating to public transportation and individual driving choices as well as freight transportation.

4. Namely, the industrial, agricultural, housing, commercial and institutional sectors as well as the waste and electricity sectors.
Public transportation is an effective way of reducing GHG emissions. When it comes to electrified public transportation, the results are even more compelling. The Montréal metro and the Deux-Montagnes commuter train already offer a fully electric public transportation service. They account for close to 50% of all travel using Québec’s public transportation system.

The government intends to invest $156 million by 2020 to expand our availability of electric public transportation throughout Québec through various initiatives, in addition to the investments to be made following the studies.

### 2015-2020 Action Priorities for Increasing the Availability of Electric Public Transportation

<table>
<thead>
<tr>
<th>Measures</th>
<th>Budget (in millions of dollars)</th>
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<tr>
<td>Program to support public transportation showcase projects</td>
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<td>Program to support the acquisition of electric school buses</td>
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<td>Support to carry out pilot projects for the electrification of taxi fleets</td>
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<td>Montréal City Mobility initiative</td>
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<td>Major public transportation projects under study:</td>
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<td>• Public transportation system on the new pont Champlain</td>
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<td>• Extension of Montréal’s metro network</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>156</strong></td>
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PROGRAM TO SUPPORT PUBLIC TRANSPORTATION SHOWCASE PROJECTS

In the innovation chain, a new product or technology needs to be demonstrated before it can be marketed. Operators want to be sure that a product has proven itself before purchasing it.

The aim of the program to support public transportation demonstration projects is to support projects that demonstrate a new electric vehicle or new public transportation technology in the actual conditions in which it will be used. Products must be manufactured by Québec companies and projects must be carried out in Québec. Potential for reducing GHG emissions and for creating economic benefits is the main eligibility criteria for the program.

This ministère des Transports (MTQ) program has $24.5 million in funding through the Fonds vert. It complements the Technoclimat program administered by the ministère de l’Énergie et des Ressources naturelles (MERN).

AN EXAMPLE OF QUÉBEC INGENUITY

With the assistance of three partners, Lion Bus has designed and built an all-electric school bus, the eLion.

Its first 100% electric bus was manufactured and tested during fall 2014 and winter 2015 on one of the Laval school board’s regular school routes. Once the data collected during the testing had been analyzed, higher standards could be adopted for the vehicle.

The final step prior to marketing involves putting a number of vehicles on the road in order to demonstrate how reliable the bus is. In the coming months, six eLion buses will be travelling on different school bus routes in the province of Québec.

The eLion is the result of a collaboration between Lion Bus, Institut du véhicule innovant (development of the battery monitoring system), TM4 (production of the engine) and B3CG Interconnect (battery assembly).

The company obtained $2.67 million from the gouvernement du Québec for this project in order to develop the prototype and demonstrate six eLion vehicles in the actual conditions in which they will be used.
PROGRAM TO SUPPORT THE ACQUISITION OF ELECTRIC SCHOOL BUSES

Some 8,000 school buses that run on diesel travel Québec’s roads on a regular basis. Replacing one diesel school bus with an electric one reduces GHG emissions by 23 tonnes a year.

The gradual electrification of school buses will help Québec in combatting climate change and in making young people and their parents aware of the advantages of using electric vehicles. It will also foster growth in an emerging industry, given that at this point the only manufacturer of electric school buses in North America is located in the province of Québec.

To encourage school bus companies to move towards electric vehicles, the government is implementing a rebate program for the purchasing of electric school buses. Buses will need to be registered in Québec and to be operated on the province’s roads for the entire time they are in use.

This program complements the vertical integration of the government’s efforts to support the creation of a new product, from design to commercialization.

This program, administered by the MTQ, has an envelope of $30 million for 2015 to 2020. It is funded by budget appropriations released through the amendment of the measure providing for compensation for diesel fuel, administered by the ministère de l’Éducation, de l’Enseignement supérieur et de la Recherche (MEESR), which is estimated to represent an annual contribution of $6 million.

SUPPORT TO CARRY OUT PILOT PROJECTS FOR THE ELECTRIFICATION OF TAXI FLEETS

The vast majority of taxi vehicles operate in urban areas, thereby increasing pollution problems in light of their intensive use. According to a feasibility study carried out by the Institut du transport avancé du Québec in 2011, vehicles used as taxis in Québec travel an average of over 70,000 km a year. Moreover, the 8,277 conventional taxis, specialized taxis (adapted utility vehicles, or VUA) and limousines operating in Québec collectively produce approximately 200,000 tonnes of CO\textsubscript{2}e in GHG emissions: the equivalent of approximately 25.5 tonnes of CO\textsubscript{2}e per year per vehicle. In comparison, private vehicles travel an average of 14,834 km per year.\textsuperscript{7} The average taxi in Québec therefore emits 5 to 6 times more GHG emissions than a private vehicle.

Making electric vehicles a part of taxi fleets in Québec therefore reduces the environmental impact and projects a positive and dynamic image of the taxi industry to both local and foreign customers.

To that end, the government intends to support initiatives involving the electrification of taxi vehicle fleets, with a view to:

> helping increase the number of electric taxis in Québec;
> offering an ideal way of showcasing Québec’s desire to electrify its transportation;
> demonstrating the viability of electric vehicles as part of a taxi service;
> acting as a powerful tool for increasing awareness of and promoting electric vehicles, with both taxi drivers and the general public.

Electrification of taxis presents a number of challenges, and testing is needed before such an initiative can be rolled out on a large scale. This program, administered by the MTQ, will provide funding for projects designed to establish the parameters for the use of electric vehicles in response to needs in this area. It has a budget envelope of $6.6 million through the Fonds vert.

\textsuperscript{7} Canadian Vehicle Survey 2009 - Natural Resources Canada.
**MONTRÉAL CITY MOBILITY INITIATIVE**

The City Mobility program was created by Volvo Group and entails establishing strategic partnerships with key players in sustainable urban mobility for the purpose of accelerating innovation and the implementation of transportation electrification. The program is currently in place in Stockholm and Gothenburg (Sweden), Hamburg (Germany) and Luxembourg (Grand Duchy of Luxembourg), and is planned for a number of other cities around the world. Montréal is the first “Mobility City” in North America.

The Montréal City Mobility program is a demonstration project initiated by the Société de transport de Montréal (STM) that will entail the acquisition of three fully electric city buses. The buses, which will rely on a conductive quick-charge system with a charging station at each end of a bus line, will be evaluated on trips with riders over a three-year period.

STM is the architect of this project, with the collaboration of Nova Bus, a Volvo Group subsidiary. For STM, this is an opportunity to test new technologies in actual operating conditions and to assess their implications from the standpoint of planning, operations, maintenance and improved customer service. Volvo Group’s expertise will be called upon in the creation of a new concept of urban electric transportation.

This project brings together sustainable mobility stakeholders in Québec, both private and public, to implement innovative, sustainable and integrated pilot projects. It will help make Montréal and the province of Québec a showcase for electromobility technologies and contribute to the development of new technologies for reducing GHG emissions.

This project has a budget of $11.9 million from the Fonds vert.

**MAJOR PUBLIC TRANSPORTATION PROJECTS UNDER STUDY**

Efficient public transportation systems are essential to an integrated vision of land use planning. For a number of years now, the government has therefore been focusing on public transportation, an approach that not only addresses environmental concerns and urban land-use issues but contributes to economic development by facilitating mobility. Plug-in electric and hybrid buses are still at the design stage, but proven electric modes of transportation such as commuter trains, subways, streetcars, trolleys and other light rail transit (LRT) systems represent a viable solution for the immediate future. These electric modes of transportation present the advantage of increasing the availability of public transportation services without generating polluting emissions.

The government is continuing its support for the expansion of public transportation, and $83 million has been earmarked in the Fonds des réseaux de transport terrestre (FORT) to carry out studies relating to the following projects:

> The public transportation system on the new pont Champlain;
> Expansion of the Montréal’s metro network;
> Electric public transit system to Montréal’s West Island.

Under the business arrangement between the gouvernement du Québec and the Caisse de dépôt et placement du Québec (CDPQ), two of these projects will be assessed for the purpose of decision-making regarding governance of the project.
PROMOTE THE USE OF LIGHT ELECTRIC VEHICLES

Each year in Québec, car travel accounts for nearly 95% of all personal travel. Internal combustion engine vehicles perform well, but not from an energy and environmental perspective. Personal electric vehicles therefore offer significant potential for reducing fuel consumption and GHG emissions.

The government intends to allocate $115.9 million to implement various measures to support the arrival of electric vehicles on Québec’s roads.

<table>
<thead>
<tr>
<th>2015-2020 ACTION PRIORITIES FOR ENCOURAGING THE USE OF LIGHT ELECTRIC VEHICLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEASURES</strong></td>
</tr>
<tr>
<td>Support the installation of fast charging stations along main roads</td>
</tr>
<tr>
<td>Support the installation of charging stations in multi-unit residential buildings, new office buildings and for on-street parking</td>
</tr>
<tr>
<td>Implement a concerted approach and structuring actions with partners to increase the number of zero-emission vehicles</td>
</tr>
<tr>
<td>“Roulez électrique” (Drive Electric) program</td>
</tr>
<tr>
<td>“Branché au travail” program</td>
</tr>
<tr>
<td>Expand the Electric Circuit network</td>
</tr>
<tr>
<td>• 785 charging stations, including 60 fast charging stations, by December 31, 2016</td>
</tr>
<tr>
<td>• Assistance to municipalities to plan the development of charging sites</td>
</tr>
</tbody>
</table>

**Total** 115.9
SUPPORT THE INSTALLATION OF FAST CHARGING STATIONS ALONG MAIN ROADS

Electric vehicles are mostly charged at home, as battery capacity is generally sufficient for daily use. However, from a safety standpoint, electric vehicle owners need an efficient and fast public charging infrastructure in order to be able to take longer trips.

MTQ is therefore working with Electric Circuit on the implementation of a network of fast charging stations along the region’s major roadways and on the creation of charging station corridors with neighbouring provinces and states, namely Ontario, New Brunswick, Vermont and Maine. This essential step, which must precede demand for this auxiliary equipment, will allay the concerns of electric vehicle users about running out of power along the way.

This MTQ measure has been allocated $2.5 million in funding under the Fonds vert.

SUPPORT THE INSTALLATION OF CHARGING STATIONS AT MULTI-UNIT RESIDENTIAL BUILDINGS, NEW OFFICE BUILDINGS AND FOR ON-STREET PARKING

The availability of charging stations is a determining factor in the decision to purchase an electric vehicle, particularly in an urban environment. Not all apartment buildings have private parking or easy access to a power outlet. At a condominium building, having to share the cost of charging stations and electricity usage can be an impediment to the installation of charging infrastructure even if parking is available.

Solutions are needed to meet these needs and to facilitate the use of electric vehicles. In more densely populated neighbourhoods, vehicles could be charged on the side of the road or in parking spaces that working people free up at the end of the day, which local residents could use at night to charge their vehicles.

This measure could also meet the specific needs of industrial and technological areas.

The ministère de l’Énergie et des Ressources naturelles (MERN), which is responsible for this initiative, will support the adoption of practical solutions for addressing these situations. It has an envelope of $5.4 million for this purpose from the Fonds vert.

CHARGING STATIONS IN URBAN AREAS FOR MONTRÉAL AND QUÉBEC

The government is determined to facilitate the arrival of electric vehicles in Québec. In urban areas, ready access to a charging station is a determining factor in the decision to purchase an electric vehicle, in particular for residents who do not have a parking space with a power outlet.

In collaboration with the cities of Montréal and Québec, MERN intends to support a project that will see the installation of charging stations in urban areas and along business arteries. In Montréal, the initiative entails setting up 25 dual 240V charging stations and three fast charging stations. In Québec, eight dual 240V charging stations will be installed as well as one fast charging station. MERN has earmarked $500,000 for this project, which could subsequently be expanded to other major cities in the province.
IMPLEMENT A CONCERTED APPROACH AND STRUCTURING ACTIONS WITH PARTNERS TO INCREASE THE NUMBER OF ZERO-EMISSION VEHICLES

There are a number of factors that influence vehicle purchases, including the type of travel the vehicle will be needed for, the number of people in the household, the funds available as well as gas prices and technological advancements. In addition, the limited availability of electric vehicles in Québec and the high prices (as compared with other jurisdictions that have implemented various measures designed to promote zero-emission vehicles in their territories) are impediments to the arrival of electric vehicles on Québec’s roads.

That is why the government intends to implement a series of concrete measures designed to increase the availability of electric vehicles in Québec and to accelerate their adoption by the public. An analysis of existing policies and initiatives in other countries that successfully support the availability and purchasing of zero-emission vehicles will be completed and will help determine the measures best suited to the situation in Québec. The measures chosen, whether collaborative, incentive-based or regulatory, will be implemented in concert with the various public and private stakeholders involved in transportation electrification as a complement to the other measures under the Action Plan.

This initiative of the ministère du Développement durable, de l’Environnement et de la Lutte contre les changements climatiques (MDDELCC) has been granted $3 million in funding through the Fonds vert.

“ROULEZ ÉLECTRIQUE” (DRIVE ELECTRIC) PROGRAM

The “Roulez électrique” program has been in effect since January 1, 2012. It offers a rebate on the purchase or lease of a fully electric, plug-in hybrid, hybrid or low-speed electric vehicle.

The rebate can be up to $8,000 depending on the model. The vehicle must be on the list of eligible vehicles. A grant for the purchase and installation of a charging station at home is also offered through this program.

To encourage businesses to consider electric vehicles for their commercial fleets, an additional $25 million was granted as part of the economic update of December 2, 2014.

This initiative, administered by MERN, has a total budget of $93 million and is funded through the Fonds vert. An evaluation of this measure is planned for 2017, providing an opportunity to consider the possibility of enhancing or adapting the initiative to new market conditions.
**“BRANCHÉ AU TRAVAIL” PROGRAM**

Charging at the workplace is the second most common option (after charging at home) in light of the average length of time that vehicles are parked there.

The “Branché au travail” program offers financial assistance to businesses, municipalities and organizations to purchase and install charging stations at the workplace. These stations must be used to charge vehicles that belong to the participant or its employees. Every charging station for which financial assistance is received must remain in operation for at least three years, and charging must be made available to employees during that period at no cost.

This initiative is administered by MERN and has a total budget of $9 million from the Fonds vert.

**EXPAND THE ELECTRIC CIRCUIT NETWORK**

The first network of public charging stations for electric vehicles in Canada, Electric Circuit offers 240V and 400V charging systems. Electric Circuit has been continually expanding since its inception in March 2012. It currently has over 450 charging stations in operation. Fourteen of them are 400V fast charging stations. By December 31, 2016, the Electric Circuit network will have 725 charging stations of 240V in operation and 60 stations of 400V.

Under the public-private business model that Electric Circuit has adopted for the 240V stations, Hydro-Québec is responsible for overseeing and coordinating the rollout and promotion of the network, while the partners have invested funds for purchasing and installing the charging stations.

For the 400V stations, the business model is designed to accelerate development of the fast charging infrastructure. It entails a contribution by Hydro-Québec of 50% of the project costs (charging station and installation) up to a maximum for the cost of the station. The partner covers the remaining costs, and revenues are shared in proportion to the partners’ investment.

To expand the availability of charging stations for people who drive electric vehicles, Electric Circuit has entered into an interoperability agreement with AddÉnergie’s VERnetwork. Since late June 2015, users with an access card for one of these two networks can use it for stations of both networks – a total of close to 600 public charging stations in Québec – not to mention VERnetwork’s stations in other provinces.

To ensure balanced coverage of charging stations throughout the region, Hydro-Québec is working with municipalities and regional county municipalities to plan the rollout. It has allocated a budget of $3 million to implement these measures.

**AN EXAMPLE OF A SUCCESSFUL PARTNERSHIP**

To expedite the installation of fast charging stations in Québec and to support expansion of the Electric Circuit network, Nissan Canada has undertaken to make a financial contribution towards the first 25 fast charging stations to be installed.

This partnership agreement is part of a new phase of the Electric Circuit initiative that will entail the creation of 50 fast charging sites on the major roadways and in urban centres by the end of 2016.

The automaker Nissan has been a leader in electric mobility and, with the launch of the Nissan LEAF, a pioneer in the dissemination of technology on a large scale. At a fast charging station it takes less than 30 minutes to achieve an 80% battery charge for the Nissan LEAF, meaning that motorists are able to get back on the road quickly.
DEVELOP INNOVATIVE SOLUTIONS FOR FREIGHT TRANSPORTATION

The ability to move goods efficiently plays a role in a business’s economic performance. Efficiency, convenience and reliability are the main criteria that determine the mode of transportation and technology that are chosen.

While the railway industry already works with electric technologies, electrification of the vehicles used in other modes of freight transportation is still in the design phase.

With regard to trucking, vehicle electrification is currently more suited to urban deliveries than to long-haul transportation, largely for reasons of autonomy. That said, in order to reduce fuel consumption and thereby improve the energy efficiency of vehicles, carriers now have access to various technologies such as electric back-up systems for heating and air conditioning and the power supply to the cab as well as equipment designed to make vehicles more aerodynamic. Technological advancements anticipated in the not-too-distant future (with regard to batteries, for example) will respond to the trucking industry’s specific needs.

The government intends to allocate $38.4 million to carry out freight transportation electrification initiatives.

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>BUDGET (IN MILLIONS OF DOLLARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures to support showcase projects in the freight transportation sector</td>
<td>12.5</td>
</tr>
<tr>
<td>Electrification incentives as part of general programs: maritime, air and rail transportation, intermodal transportation and green trucking</td>
<td>25.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38.4</strong></td>
</tr>
</tbody>
</table>
MEASURES TO SUPPORT SHOWCASE PROJECTS IN THE FREIGHT TRANSPORTATION SECTOR

When a new vehicle is being launched on the market, entrepreneurs have difficulty closing their first sales when the vehicle has not proven itself in a real-life situation. Such vehicles are used primarily for commercial activities, and purchasers want to be certain the vehicles are reliable.

Measures will therefore be implemented to support demonstration projects in the trucking and logistics industries as well as in maritime, air and rail transportation.

These MTQ initiatives have been given $12.5 million under the Fonds vert. They complement the Technoclimat program administered by MERN.

ELECTRIFICATION INCENTIVES IN MARITIME, AIR AND RAIL TRANSPORTATION, INTERMODAL TRANSPORTATION AND GREEN TRUCKING

MTQ has three programs intended to reduce or prevent GHG emissions in the freight transportation sector:

> Programme d’aide à l’amélioration de l’efficacité du transport maritime, aérien et ferroviaire (PETMAF);
> Écocamionnage (green trucking);
> Programme visant la réduction ou l’évitement des émissions de gaz à effet de serre par le développement du transport intermodal (PREGTI).

For these three programs, enhancements of up to twice the regular grant amount are granted for transportation electrification projects. For example, the PETMAF could provide up to $2,000 per tonne of greenhouse gas avoided, as compared with $1,000 for other projects.

An envelope of up to $25.9 million will support attainment of the objectives of the Transportation Electrification Action Plan 2015-2020 through these MTQ programs funded under the Fonds vert.
To develop the transportation electrification industry, the government has identified four specific measures:

- **INTENSIFY** research and development
- **SUPPORT** the marketing and export of innovative products
- **STIMULATE** private investment
- **TRAIN** skilled labour
INTENSIFY RESEARCH, DEVELOPMENT AND INNOVATION OF SMEs

Innovation is an important tool for developing and diversifying the economy. With greater capacity for innovation, businesses are better equipped to deal with competition and in a better position in domestic and global markets.

Each year over 10,000 Québec businesses take advantage of the research and development (R&D) tax credit. Only a small portion of them work in collaboration with the university research system. Accordingly, the government intends to strengthen the establishment of fruitful exchanges between industry and the research community.

More than $52 million will therefore be spent on implementing measures designed to support research, development and innovation activities at SMEs.

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>BUDGET (IN MILLIONS OF DOLLARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support collaborative industrial innovation projects related to transportation electrification and intelligent transport systems</td>
<td>16.5</td>
</tr>
<tr>
<td>Implement mobilizing projects in transportation electrification</td>
<td>20</td>
</tr>
<tr>
<td>Support the development of new technologies or innovative processes in terms of energy efficiency (envelope earmarked for transportation electrification technologies under the Technoclimat program)</td>
<td>5</td>
</tr>
<tr>
<td>Support SMEs to help them acquire, implement and market equipment/technologies allowing to reduce greenhouse gas emissions</td>
<td>10</td>
</tr>
<tr>
<td>Support the organization of scientific and technical international events in Québec</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>52.1</strong></td>
</tr>
</tbody>
</table>
SUPPORT COLLABORATIVE INDUSTRIAL INNOVATION PROJECTS RELATED TO TRANSPORTATION ELECTRIFICATION AND INTELLIGENT TRANSPORT SYSTEMS

Quebecers’ ingenuity and creativity are widely recognized. In order to draw on those qualities and to generate concrete projects more quickly, the government intends to promote collaboration between researchers and industry stakeholders.

Intermediary agencies supported by the government act as brokers in order to pool industrial and academic expertise in collaborative projects and to participate in their funding. These agencies serve as platforms for the development and funding of research projects centred on industry’s needs and bring together businesses and publicly-funded research institutions such as universities, colleges and public research centres.

The projects that are selected cover the entire innovation chain. They range from the most basic projects to prototyping and demonstration through to marketing initiatives.

Such collaborations make it possible to share costs and the risks inherent to research projects, to combine industrial and public research, to facilitate knowledge transfer and to promote the creation of strategic partnerships.

A variety of organizations are involved in the transportation electrification and intelligent transport sector. They will be called upon to work together to facilitate the interdisciplinarity needed to carry out integrative projects.

Take the example of Consortium Inno-VÉ, established in 2012, whose main focus is electric vehicles. Thus far, Inno-VÉ has supported roughly ten research projects carried out in partnership, with over a million dollars in funding. In June 2015, the group expanded its area of activity to include electrical equipment manufacturers and it became InnovÉÉ (Innovation en énergie électrique). Complementary components such as intelligent networks and distribution infrastructures for charging were added to InnovÉÉ’s areas of expertise. Prompt (information and communications technologies), PRIMA Québec (advanced materials) and CRITM (metal processing) are also participating in activities related to the electrification sector by developing lighter materials, traffic monitoring systems or detection equipment.

The ministère de l’Économie, de l’Innovation et des Exportations (MEIE) has been given $16.5 million in funding to support collaborative initiatives involving different sectors of the transportation electrification industry. Of that amount, $11 million comes from the Fonds vert.

A CONCRETE EXAMPLE OF A COLLABORATIVE RESEARCH INITIATIVE

Optimizing the efficiency of the electric engine in urban heavy transport

When a vehicle makes repeated stops, the engine is working inefficiently much of the time. Battery power is then dissipated through heat instead of propelling the vehicle. The purpose of this initiative is to overcome this challenge by focusing on the motivity portion, which uses almost all of the energy.

Among the companies that could stand to benefit directly from this technological advancement are those that operate in the public transportation, school transportation or local freight transportation sectors (for mining and specialized industrial applications, for example).
IMPLEMENT MOBILIZING PROJECTS IN TRANSPORTATION ELECTRIFICATION

Known for its electricity production, Québec has an abundance of economically viable and renewable energy sources and therefore holds a major competitive advantage in relation to other jurisdictions. Québec also has a significant amount of expertise in research and innovation in the area of transportation electrification by virtue of having companies that are well positioned in this sector and a high-calibre research infrastructure, among other things.

In order to maximize these advantages, reduce our dependence on imported fossil fuels and facilitate the transition to a low-carbon economy, the government has granted $20 million (up to 2020) under the Fonds vert to MEIE to carry out mobilizing projects in transportation electrification.

Based on the concept of mobilizing project, the government provides financial support to private for-profit companies to facilitate their joint efforts to implement design projects relating to innovative products or processes by mobilizing universities, public research centres and SMEs.

More specifically, in the context of the fight against climate change, a mobilizing project in transportation electrification:

> is driven by the industry’s vision and leadership;
> leads to the creation of new products or processes that will serve to reduce GHG emissions in Québec once they are made commercially available;
> helps accelerate innovation and innovative solutions that confer a competitive advantage on Québec businesses and that will yield maximum economic and social benefits for Québec through the development of new technologies designed to reduce GHG emissions.

An initial call for projects will be launched in fall 2015. This MEIE initiative is supported by $20 million in funding under the Fonds vert.

SUPPORT THE DEVELOPMENT OF NEW TECHNOLOGIES OR INNOVATIVE PROCESSES IN TERMS OF ENERGY EFFICIENCY (TECHNOCLIMAT PROGRAM)

The aim of the Technoclimat program is to reduce GHG emissions and to encourage the development of new technologies or innovative processes relating to energy efficiency and emerging energy. The program provides financial support to project promoters whose main focus is demonstrating such technologies or processes in a real-life environment.

The Technoclimat program, administered by MERN, initially had a total budget of $55 million for 2013-2020 through the Fonds vert under the 2013-2020 Climate Change Action Plan and the Regulation respecting the annual share payable.

Under the December 2014 economic update, MERN was granted an additional envelope of $41 million for SMEs through this initiative for 2015-2020.

To support technological advancements in transportation electrification, an envelope of $5 million has been earmarked for strategic projects in this sector.

This program complements those of the MTQ aimed at supporting demonstration projects in public transportation and freight transportation.
To move the Québec economy towards a major reduction in its carbon footprint in the short, medium and long term, the government intends to support businesses that invest in new equipment and new technologies that can reduce GHG emissions.

The initiative focuses on Québec’s strengths and advantages, including its production of hydroelectric power, and on the expertise of businesses that are well positioned in the clean technology sector. These technological advancements will enable Québec to strengthen the resilience of its entire economy by promoting the expansion and consolidation of a number of promising industries in a low-carbon economy.

TRANSPORTATION ELECTRIFICATION IS ONE OF THE PROMISING INDUSTRIES IN THAT REGARD, IN PARTICULAR BECAUSE IT HELPS INCREASE THE ECONOMIC AND ENVIRONMENTAL ADVANTAGES THAT QUEBEC CAN DERIVE FROM THE CLEAN ENERGY IT PRODUCES.

This initiative will enable businesses to integrate equipment and new technologies that will reduce their GHG emissions and increase their productivity.

MEIE is allocating an additional $10 million of the Fonds vert to the Fonds de développement économique (FDE) for this type of project in the transportation electrification sector.

The 29th International Electric Vehicle Symposium (EVS29) will take place in Montreal from June 19 to 22, 2016. The city will welcome some 3,000 participants from around the world, including the leading international experts in electric mobility.

This event is one of the most prestigious and popular international gatherings on the subject of electric vehicles. Hosted by the World Electric Vehicle Association (WEVA) on a different continent every 12 to 18 months, the symposium includes a trade fair, technical visits and talks on the most advanced technologies and products in electric mobility. Various activities and activities will be organized for foreign investors as a sidebar to the symposium in order to highlight Québec’s achievements in transportation electrification.

Hosting international events helps promote Québec’s strengths and expertise in transportation electrification, the government hopes to strengthen its position as a leader in this sector.

The government intends to support the hosting of major events intended to increase engagement between national and international participants and between the business and research communities.

These exchanges will enable industry stakeholders to enhance their knowledge, discuss the issues facing the sector, come up with potential solutions and anticipate changes, thereby contributing to the growth of a strong, dynamic and innovative sector of the economy that is able to face current challenges and put forward the technologies of tomorrow.

MONTRÉAL WILL HOST THE 29TH INTERNATIONAL ELECTRIC VEHICLE SYMPOSIUM IN 2016.
Marketing comes after the innovation process, and as a result it is often neglected by businesses because of a lack of resources. Marketing is therefore far down on the list of priorities when budgets are being planned. Nevertheless, the way a product is presented to customers and the ability to do so have a significant influence on a company’s competitiveness and its success in foreign markets.

### 2015-2020 Action Priorities for Supporting the Marketing and Export of Innovative Products

<table>
<thead>
<tr>
<th>Measures</th>
<th>Budget (in millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support businesses in the transportation electrification sector to help them develop markets outside Québec</td>
<td>0.75</td>
</tr>
<tr>
<td>Support the introduction of innovative products to the market – C3E</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.75</strong></td>
</tr>
</tbody>
</table>
SUPPORT BUSINESSES IN THE TRANSPORTATION ELECTRIFICATION SECTOR TO HELP THEM DEVELOP MARKETS OUTSIDE QUÉBEC

The growth of this industry depends on the development of export markets.

Export Québec and its partners help businesses succeed in foreign markets. The government’s main tools in this regard are guidance and advice, financial assistance, watching out for business opportunities and activities such as trade missions and the hosting of foreign delegations.

MEIE will allocate an average of $150,000 annually to support businesses in markets outside Québec.

SUPPORT THE INTRODUCTION OF INNOVATIVE PRODUCTS TO THE MARKET – CENTRE OF EXCELLENCE IN ENERGY EFFICIENCY (C3E)

The Center of Excellence in Energy Efficiency (C3E) provides equity funding to help businesses market their technologies or services relating to energy efficiency and renewable energy.

A total of $4 million over two years has been allocated to C3E to support innovative SMEs with transportation electrification projects that have reached the pre-commercialization and commercialization stages up to 2020.

Financial assistance is granted through MERN under the 2013-2020 Climate Change Action Plan.

A CONCRETE EXAMPLE OF AN ACTIVITY HIGHLIGHTING QUÉBEC EXPERTISE IN TRANSPORTATION ELECTRIFICATION

EV2014VÉ, a national conference organized by Electric Mobility Canada, took place in Vancouver, British Columbia, from October 28 to 30, 2014.

Over twenty Québec businesses, associations and research institutes participated in this event to present advancements and successes in the electric vehicle industry in Québec.

In conjunction with the conference, Export Québec and Antenne du Québec à Vancouver organized a trade event in partnership with the British Columbia Ministry of International Trade. Close to 65 people, including a delegation from Israel seeking to facilitate commercial partnerships, took part in a business networking evening.

This trade event also gave Ford, Nissan, Mitsubishi and General Motors an opportunity to present their approaches and their needs with regard to electric vehicles. A round of brief commercial presentations by Québec businesses participating in the activity provided an opportunity to facilitate discussion with participants, including those from British Columbia.

A CONCRETE EXAMPLE OF C3E’S WORK

C3E provided support to AddÉnergie, which manufactures charging stations for electric vehicles, in making its first sales in Québec. This support included assisting on an initial commercial showcase project and helping the company become one of the official suppliers bidding on large tender calls.

C3E also solicited the support of major players such as Rio Tinto, which undertook to provide engineering services covering the aluminium finishes on charging stations.
STIMULATE INVESTMENTS

Private investment contributes to Québec’s economic vitality by helping businesses to become more productive, more competitive, to manufacture new products and develop new markets.

For a business, investment decisions depend on a number of determinants such as the business environment, the human and financial capital and transportation infrastructures.

The electric transportation market is emerging throughout the world, and in Québec in particular.

In the transportation electrification sector, Québec stands out in North America as a result of its short series production of vehicles, its expertise in electric powertrain technologies, batteries and charging systems and the availability of affordable renewable electricity generated without GHG emissions. The government intends to take advantage of this position to consolidate its electric transportation industry and attract foreign businesses in fields connected with the transportation of tomorrow, including driverless vehicles.

2015-2020 ACTION PRIORITIES FOR STIMULATING INVESTMENT

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>BUDGET (IN MILLIONS OF DOLLARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support investment projects related to transportation electrification</td>
<td>10</td>
</tr>
<tr>
<td>Encourage foreign companies to settle in Québec</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>
SUPPORT INVESTMENT PROJECTS RELATED TO TRANSPORTATION ELECTRIFICATION

In order to build a viable industry and to maximize the potential long-term benefits, Québec businesses need to invest in their production and marketing tools as well as their manufacturing processes.

The ministère de l’Économie, de l’Innovation et des Exportations (MEIE) has earmarked an amount of $10 million from the Fonds du développement économique (FDE) to support manufacturing projects relating to transportation electrification. The aim of this program is to accelerate the realization of investment initiatives involving the implementation, expansion or modernization of businesses.

ENCOURAGE FOREIGN COMPANIES TO SETTLE IN QUÉBEC

The government is not simply counting on Québec’s electric vehicle industry to grow organically. It is also aiming to attract foreign businesses operating in this field to Québec, in particular to add more value to the value chain in Québec.

Accordingly, the targeted prospecting efforts that the government and its partners are making with regard to transportation electrification are being continued at the international level.

MEIE has set aside an amount of $20 million in the FDE for initiatives to support branches of Québec businesses in the electric transportation sector.
Whenever a new industry is being developed, training will inevitably be needed. In the electric vehicles sector, training needs largely centre on knowledge of the specific technologies used and the risks associated with their use.

This industry currently accounts for some 3,000 direct and indirect jobs. Training has become a major issue in this sector owing to the rapid growth in labour needs.

At this point, electric vehicles are not the subject of any specific courses or programs. In the manufacturing sector, new technologies associated with transportation electrification present a problem of overqualification that forces university-educated professionals to work as technicians. The content being taught in vocational diploma programs in assembly and mechanics must be adjusted to meet the needs of businesses operating in the electric vehicle sector.

The ministère de l’Éducation, de l’Enseignement supérieur et de la Recherche (MEESR) is collaborating with the various partners in order to determine the training needed to enhance skills in the various trades involved with electric vehicles.

### 2015-2020 ACTION PRIORITIES FOR TRAINING SKILLED LABOUR

**MEASURES**

- Introduce a certificate of college studies (AEC) in transportation electrification
- Introduce a Master’s degree of 15 credits

*Because these measures are part of normal government operations, no special funds have been allocated to them.*
PARTNERS MOBILIZING

In 2014, a study on labour force development, training and forward-looking human resources management involving businesses in the Laurentian region was carried out by Emploi-Québec Laurentides, with funding from the Commission des partenaires du marché du travail (CPMT), in partnership with Emploi-Québec Laurentides, the regional conference of elected officials (CRÉ) for the Laurentian region and Cégep de Saint-Jérôme.  

The study reported on the specialized labour training needs of the companies surveyed, which work on electric vehicles and new transportation technologies, with regard to vocational and technical studies programs in particular.

The manufacturing of electric vehicles as well as research and development do in fact create new requirements in terms of design and manufacturing processes and the operation, maintenance and repair of new equipment.

EARLY INITIATIVES

Training programs intended for first responders who are called when there is an incident involving an electric or plug-in hybrid vehicle have been developed by the business services section of Cégep de Saint-Jérôme, in collaboration with Institut du véhicule innovant (IVI).

These development programs are designed to train firefighters, police officers, ambulance attendants and tow truck operators on techniques for intervening safely in emergency situations involving electric vehicles. The training will be geared to each type of professional to ensure that the distinct responsibilities and roles of the various professions are taken into account.

Last spring, a series of training sessions funded by Emploi-Québec was offered to 42 police officers from municipalities in the Laurentian region, Laval and the Montérégie region.

INTRODUCE A CERTIFICATE OF COLLEGE STUDIES (AEC) IN TRANSPORTATION ELECTRIFICATION

A new program in transportation electrification is currently being developed by Cégep de Saint-Jérôme and Cégep de Rivière-du-Loup with the support of local partners. The aim of the program is to train a qualified labour force that will be able to meet the current and future needs of businesses operating in this field.

INTRODUCE A MASTER’S DEGREE OF 15 CREDITS

Electric vehicles involve technologies from a number of specialized areas, including mechanical and electrical engineering, electronics and materials.

The introduction of a short university master’s program in transportation electrification is intended to complement existing programs. It is aimed at students enrolled in a university program and people already in the labour force who would like to enhance or perfect their skills in the different fields associated with electric transportation, such as battery chemistry, chargers and charging stations.

CREATE A FAVOURABLE ENVIRONMENT

The adoption of electric vehicles requires a major paradigm shift among the general public, because gas-powered vehicles have been a part of motorists’ daily lives for more than a century.

The government therefore intends to take action to facilitate this transition by creating an environment conducive to electric transportation, by setting an example through the progressive electrification of its vehicle fleet and by implementing promotion and awareness activities with businesses and the general public.
Because transportation electrification involves a number of different departments and agencies, joint action is required.

Regulatory changes will be needed in the coming years. Legislative amendments will also be proposed to the National Assembly in anticipation of changes in this sector.

<table>
<thead>
<tr>
<th>PROPOSED MEASURES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide electric vehicles with privileged access to reserved lanes where carpool is authorized</td>
</tr>
<tr>
<td>Review the Construction Code to provide for the installation of charging stations in new residential buildings</td>
</tr>
<tr>
<td>Modify the Highway Safety Code to allow low-speed vehicles to travel on public roads**</td>
</tr>
<tr>
<td>Modify the Highway Safety Code to regulate access to parking spaces equipped with charging stations for electric vehicles **</td>
</tr>
<tr>
<td>Modify the diesel compensation program for school buses</td>
</tr>
<tr>
<td>Implement measures to support urban planning favouring ecomobility:</td>
</tr>
<tr>
<td>• Program for the sustainable development of communities</td>
</tr>
<tr>
<td>• Distribution of development tools intended for municipalities</td>
</tr>
<tr>
<td>Adopt new government policy directions in land use planning that will promote transportation electrification</td>
</tr>
</tbody>
</table>

* Because these measures are part of normal government operations, no special funds have been allocated to them.

** Pending approval of the bill by the National Assembly.
PROVIDE ELECTRIC VEHICLES WITH PRIVILEGED ACCESS TO RESERVED LANES WHERE CARPOOL IS AUTHORIZED

As of November 27, 2014, electric vehicles with a green licence plate have been able to travel in the reserved lane of autoroute Robert-Bourassa in the city of Québec, regardless of the number of passengers.

This initiative was launched as part of a pilot project that started on autoroute Robert-Bourassa in Québec in 2014. The aim of the project is to determine whether allowing motorists to use the reserved lane can improve traffic flow and take place in a manner that is safe for all users.

The initial results of this pilot project have been promising enough for MTQ to decide to allow electric vehicles to use the reserved lanes on certain portions of the following infrastructures by 2015:

<table>
<thead>
<tr>
<th>GREATER MONTRÉAL AREA</th>
<th>EASTERN PART OF QUÉBEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aut. 15, northbound</td>
<td>Aut. 440, westbound</td>
</tr>
<tr>
<td>Aut. 25</td>
<td>Aut. 740</td>
</tr>
<tr>
<td>Road 112, westbound</td>
<td>Route 116, eastbound</td>
</tr>
<tr>
<td>(as of November 2015)</td>
<td></td>
</tr>
<tr>
<td>Route 132, eastbound</td>
<td></td>
</tr>
</tbody>
</table>

The government would like to extend the application of this measure where conditions allow and is encouraging municipalities to follow suit in authorizing electric vehicles to use the reserved lanes under their jurisdiction when carpooling is permitted, as the Communauté métropolitaine de Montréal has done.9

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REVIEW THE CONSTRUCTION CODE TO PROVIDE FOR THE INSTALLATION OF CHARGING STATIONS IN NEW RESIDENTIAL BUILDINGS

The cost of installing a charging station at an existing building can be very high and could become a major obstacle to purchasing an electric vehicle. Therefore, it is very important to anticipate needs and to plan for the electric infrastructure required to install a charging station when a new home is being built.

The Régie du bâtiment du Québec (RBQ) is working closely on a regulatory proposal for the chapter on electricity in the Construction Code in order to bring in new standards for the installation of charging stations, in particular outdoor 240V charging stations.

MODIFY THE HIGHWAY SAFETY CODE TO ALLOW LOW-SPEED VEHICLES TO TRAVEL ON PUBLIC ROADS

Low-speed vehicles (LSVs) are vehicles whose maximum speed is less than 40 km/h and that run entirely on electricity. On the basis of Transport Canada’s definition (Standard 500), these vehicles do not meet the same safety requirements as passenger vehicles.

In light of their specific characteristics, LSVs in Quebec are generally used for utilitarian purposes, such as municipal maintenance and for moving goods on a campus or in a park.

The gouvernement du Québec carried out a pilot project from 2008 to 2013 to test what would happen if LSVs were allowed to travel on certain public roadways. Over and above the obligations set out in Transport Canada’s Standard 500, the vehicles involved in the pilot project had to be equipped with audible warning devices, three-point seat belts, windshield wipers and speedometers. During the pilot project no particular problems relating to the use of LSVs on public roadways were identified.

The Minister of Transport intends to propose a legislative amendment to the Highway Safety Code before the National Assembly to allow this type of vehicle to travel on certain public roads in Québec.

A regulation concerning the technical requirements that go beyond Transport Canada’s requirements will be tied in with the amendment to the Code to ensure that LSVs are being operated safely.

MODIFY THE HIGHWAY SAFETY CODE TO REGULATE ACCESS TO PARKING SPACES EQUIPPED WITH CHARGING STATIONS FOR ELECTRIC VEHICLES

To attract electric vehicle users, and to promote this ecological means of transportation, a number of stores and other businesses offer parking spaces with charging stations. Although these parking spaces may be indicated as being reserved for electric vehicles only, there is no statute or regulation that prohibits a non-electric vehicle from using them.

In Québec, an electric vehicle may be identified by a licence plate on which the information appears in green (green licence plate). To ensure that these parking spaces are accessed only by users of electric vehicles with a green licence plate, the Minister of Transport intends to ask the National Assembly to consider a legislative amendment to the Highway Safety Code that would entail a fine for any owner of a non-electric vehicle who uses one of these spaces.
**MODIFY THE DIESEL COMPENSATION PROGRAM FOR SCHOOL BUSES**

In its efforts to combat climate change, Québec has made it a priority to reduce GHG emissions in the transportation industry, which is the main source of emissions. To ensure that government policy is consistent, the ministère de l’Éducation, de l’Enseignement supérieur et de la Recherche (MEESR) will amend its program that provides compensation for fuel costs to school bus operators. This program grants a specific allowance each year to cover the increase in diesel fuel or natural gas prices. The adjustment applies to daily school transportation services provided using vehicles (cars, minibuses and buses) that run on these sources of energy.

MEESR is also contemplating the possibility of amending the provisions of the Regulation respecting student transportation that deal with the life span of vehicles used for school transportation.

**IMPLEMENT MEASURES TO SUPPORT URBAN PLANNING FAVOURING ECOMOBILITY**

The ministère des Affaires municipales et de l’Occupation du territoire (MAMOT) intends to implement measures funded under the Fonds vert as part of the implementation of the 2013-2020 Climate Change Action Plan to support urban planning conducive to ecomobility.

The purpose of these measures is to provide financial assistance and planning tools to municipalities interested in this idea.

- **Program for the sustainable development of communities.**
  Financial assistance will be offered to municipalities that wish to engage in urban planning conducive to the sustainable development of their communities, including sustainable transportation and transportation electrification.

- **Distribution of development tools for municipalities.**
  Development tools designed specifically for municipalities will be produced in order to promote compact forms of urban development that are conducive to transportation electrification.

**ADOPT NEW GOVERNMENT POLICY DIRECTIONS IN LAND USE PLANNING THAT WILL PROMOTE TRANSPORTATION ELECTRIFICATION**

The government intends to adopt new government policies on land use planning to help communities implement sustainable ways of living. One of the areas that these government policies on sustainable communities address is sustainable mobility. As a result, transportation electrification could be made a part of land use planning.

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LEAD BY EXAMPLE

The gouvernement du Québec began using electric vehicles in 2012. Electrification of its fleet and the installation of charging stations at its buildings show the government’s willingness to play an active role in the movement and is a way of promoting awareness among fleet managers and electric vehicle users.

2015-2020 ACTION PRIORITIES FOR LEADING BY EXAMPLE

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>BUDGET (IN MILLIONS OF DOLLARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proceed with the electrification of the government’s fleet</td>
<td>15</td>
</tr>
<tr>
<td>Install public charging stations in government buildings</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
PROCEED WITH THE ELECTRIFICATION OF THE GOVERNMENT’S FLEET

The government currently has 330 electric vehicles in operation as part of its fleet. This is the largest fleet of electric vehicles in Canada. The Centre de gestion de l’équipement roulant (CGER) manages this fleet of electric vehicles. Mandated by the government to implement this initiative, the CGER analyzes the needs of ministries and agencies and advises them on their vehicle choices.

In December 2013, this desire to electrify the government’s fleet led the Québec cabinet to adopt a government purchasing policy for light vehicles. Under the policy, ministries and agencies as well as the health care and education systems are required to replace a vehicle that has reached the end of its useful life with an electric vehicle when one is available in the same vehicle class.

The government will add 1,000 electric vehicles to its fleet by 2020. This target is based on the fact that the cost of electric vehicles is still high, that few models are available in certain classes and that ministries and agencies remain subject to budget constraints.

The government is putting $15 million into this measure, which also includes the acquisition and installation of charging stations. This amount will be funded from the appropriations of the ministries and agencies concerned.

INSTALL PUBLIC CHARGING STATIONS IN GOVERNMENT BUILDINGS

As part of its mandate involving the planning and implementation of public infrastructure projects at its buildings, the Société québécoise des infrastructures (SQI) will evaluate the possibility of installing charging stations when the criteria for success have been met in the case of major construction and renovation projects valued at over $5 million.

For each of these projects, an analysis will be carried out to ensure the feasibility, appropriateness and cost-effectiveness of installing charging stations, in accordance with the budget allocated to carry out the project.

Where applicable, charging stations installed in government buildings can be used by both employees and the general public.
Transportation electrification is an effective way of reducing GHG emissions and it is one of the pillars of Québec's economic development. For this endeavour to succeed, as many people as possible must support it.

It is for that reason that the government intends to promote its efforts in this area and to support awareness activities around the purchasing of electric vehicles with businesses and the public.

### 2015-2020 Action Priorities for Promoting Electric Vehicles and Government Action

<table>
<thead>
<tr>
<th>Measures</th>
<th>Budget (in millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a government communication strategy and implement the Action Plan</td>
<td>6</td>
</tr>
<tr>
<td>Support awareness initiatives for electric vehicles</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8.6</strong></td>
</tr>
</tbody>
</table>
**ESTABLISH A GOVERNMENT COMMUNICATION STRATEGY AND IMPLEMENT THE ACTION PLAN**

A communication strategy will be rolled out to promote the advantages of driving electric, to demystify electric vehicles with the public, to promote the government’s transportation electrification initiatives and to highlight its achievements. At the beginning of each year, yearly planning of such activities will take place in collaboration with government and community partners.

An amount of $6 million has been earmarked for implementation of this measure, with funding being provided under the Fonds vert.

**SUPPORT AWARENESS INITIATIVES FOR ELECTRIC VEHICLES**

The government will collaborate with its partners to support the implementation of projects or events intended to increase awareness of electric vehicles and their advantages, and to promote their use.

An envelope of $2.6 million from the Fonds vert will be allocated to this initiative.
FINANCIAL FRAMEWORK
A major financial effort is being put into promoting electric transportation in order to reduce GHG emissions. This approach accounts for close to three-quarters of the budget, or just over $310 million. Developing the industry and creating a favourable environment represent 21% and 5% of the total budget respectively.

The Transportation Electrification Action Plan 2015-2020 has a total budget of $420.75 million. This envelope comes from three funding sources: the Fonds vert accounts for 60% ($253.5 million) of the total budget, appropriations of ministries and agencies 20% ($84.25 million) and the Fonds des réseaux de transport terrestre (FORT) 20% ($83 million).
The measures intended to promote electric transportation will have impacts on the availability of public transportation as well as the use of passenger vehicles and freight transportation. The following chart and table illustrate the breakdown of the budget for this component of the Action Plan.

**BREAKDOWN OF BUDGET ALLOCATED TO MEASURES INTENDED TO PROMOTE ELECTRIC TRANSPORTATION**

- **Public Transportation:** 50% ($156M)
- **Personal Transportation:** 31% ($96M)
- **Freight Transportation:** 12% ($38.4M)
- **Charging Infrastructure:** 7% ($19.9M)
### 2015-2020 ACTION PRIORITIES FOR PROMOTING ELECTRIC TRANSPORTATION

#### INCREASE THE AVAILABILITY OF ELECTRIC PUBLIC TRANSPORTATION

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP.</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program to support public transportation showcase projects</td>
<td>MTQ</td>
<td>24.5</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Program to support the acquisition of electric school buses</td>
<td>MTQ</td>
<td>30</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support to carry out pilot projects for the electrification of taxi fleets</td>
<td>MTQ</td>
<td>6.6</td>
<td>2015-2018</td>
</tr>
<tr>
<td>Montréal City Mobility initiative</td>
<td>MTQ</td>
<td>11.9</td>
<td>2015-2017</td>
</tr>
<tr>
<td>Major public transportation projects under study:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Public transportation system on the new pont Champlain</td>
<td>MTQ</td>
<td>83</td>
<td>2015-2019</td>
</tr>
<tr>
<td>• Extension of Montréal’s metro network</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Electric public transit system to Montréal’s West Island</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>156</td>
<td></td>
</tr>
</tbody>
</table>
### PROMOTE THE USE OF LIGHT ELECTRIC VEHICLES

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP.</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support the installation of fast charging stations along main roads</td>
<td>MTQ</td>
<td>2.5</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support the installation of charging stations in multi-unit residential buildings, new office buildings and for on-street parking</td>
<td>MERN</td>
<td>5.4</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Implement a concerted approach and structuring actions with partners to increase the number of zero-emission vehicles</td>
<td>MDDELCC</td>
<td>3</td>
<td>2015-2020</td>
</tr>
<tr>
<td>“Roulez électrique” program</td>
<td>MERN</td>
<td>93</td>
<td>2015-2017</td>
</tr>
<tr>
<td>“Branché au travail” program</td>
<td>MERN</td>
<td>9</td>
<td>2015-2017</td>
</tr>
<tr>
<td>Expand the Electric Circuit network: • 785 charging stations, including 60 fast charging stations (400 V), by December 31, 2016 • Assistance to municipalities to plan the development of charging sites</td>
<td>Hydro-Québec</td>
<td>3</td>
<td>2015-2017</td>
</tr>
</tbody>
</table>

**Total** 115.9
DEVELOP INNOVATIVE SOLUTIONS FOR FREIGHT TRANSPORTATION

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures to support showcase projects in the freight transportation sector</td>
<td>MTQ</td>
<td>12.5</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Electrification incentives as part of general programs: maritime, air and rail transportation, intermodal transportation and green trucking</td>
<td>MTQ</td>
<td>25.9</td>
<td>2015-2020</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38.4</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL COSTS OF MEASURES TO PROMOTE ELECTRIC TRANSPORTATION

<table>
<thead>
<tr>
<th>PRIORITIES</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the availability of electric public transportation</td>
<td>156</td>
</tr>
<tr>
<td>Promote the use of light electric vehicles</td>
<td>115.9</td>
</tr>
<tr>
<td>Develop innovative solutions for freight transportation</td>
<td>38.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>310.3</strong></td>
</tr>
</tbody>
</table>
The measures intended to develop the transportation electrification industry are designed to intensify research and development as well as innovation, to support the marketing and export of products, to stimulate investments and to train skilled labour. The following chart and table illustrate the breakdown for the budget allocated to this component of the Action Plan.

**BREAKDOWN OF BUDGET ALLOCATED TO MEASURES INTENDED TO DEVELOP THE INDUSTRY**

- **R-D AND INNOVATION:** $52.1M (60%)
- **SUPPORT FOR INVESTMENT:** $30M (35%)
- **MARKETING AND EXPORT:** $4.75M (5%)
# 2015-2020 Action Priorities for Developing the Industry

## Intensify Research, Development and Innovation of SMEs

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP.</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support collaborative industrial innovation projects related to transportation electrification and intelligent transport systems</td>
<td>MEIE</td>
<td>16.5</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Implement mobilizing projects in transportation electrification</td>
<td>MEIE</td>
<td>20</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support the development of new technologies or innovative processes in terms of energy efficiency (Technoclimat program)</td>
<td>MERN</td>
<td>5</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support SMEs to help them acquire, implement and market equipment/technologies allowing to reduce GHG emissions</td>
<td>MEIE</td>
<td>10</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support the organization of scientific and technical international events in Québec</td>
<td>MTQ</td>
<td>0.6</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>52.1</td>
<td></td>
</tr>
</tbody>
</table>
**SUPPORT THE MARKETING AND EXPORT OF INNOVATIVE PRODUCTS**

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP.</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support businesses in the transportation electrification sector to help them develop markets outside Québec</td>
<td>MEIE</td>
<td>0.75</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support the introduction of innovative products to the market - Center of Excellence in Energy Efficiency (C3E)</td>
<td>MERN</td>
<td>4</td>
<td>2015-2017</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>4.75</strong></td>
<td></td>
</tr>
</tbody>
</table>

**STIMULATE INVESTMENTS**

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>M/A RESP.</th>
<th>AMOUNT (IN MILLIONS OF DOLLARS)</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support investment projects related to transportation electrification</td>
<td>MEIE</td>
<td>10</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Encourage foreign companies to settle in Québec</td>
<td>MEIE</td>
<td>20</td>
<td>2015-2020</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>
**TRAIN SKILLED LABOUR**

**TOTAL COSTS OF MEASURES TO DEVELOP THE INDUSTRY**

**MEASURES**

<table>
<thead>
<tr>
<th>Description</th>
<th>M/A RESP.</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce a certificate of college studies (AEC) in transportation electrification</td>
<td>MEESR</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Introduce a Master’s degree of 15 credits</td>
<td>MEESR</td>
<td>2015-2020</td>
</tr>
</tbody>
</table>

*Because these measures are part of normal government operations, no specific budget will be allocated for them.*

**PRIORITIES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (in millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensify research, development and innovation of SMEs</td>
<td>52.1</td>
</tr>
<tr>
<td>Support the marketing and export of innovative products</td>
<td>4.75</td>
</tr>
<tr>
<td>Stimulate investments</td>
<td>30</td>
</tr>
<tr>
<td>Train skilled labour</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>86.85</strong></td>
</tr>
</tbody>
</table>
CREATE A FAVOURABLE ENVIRONMENT

The measures adopted to create a favourable environment for transportation electrification entail the implementation of a legislative and regulatory framework promoting transportation electrification, leading by example and increasing awareness among businesses and the general public. The following chart and table illustrate the breakdown of the budget for this component of the Action Plan.

BREAKDOWN OF BUDGET ALLOCATED TO MEASURES INTENDED TO CREATE A FAVOURABLE ENVIRONMENT

- **Leading by Example**: $15M (64%)
- **Promotion and Awareness**: $8.6M (36%)
### PROPOSE THE IMPLEMENTATION OF A LEGISLATIVE AND REGULATORY FRAMEWORK PROMOTING TRANSPORTATION ELECTRIFICATION

#### PROPOSED MEASURES*

<table>
<thead>
<tr>
<th>Description</th>
<th>M/A RESP.</th>
<th>PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide electric vehicles with privileged access to reserved lanes where carpool is authorized</td>
<td>MTQ</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Provide free access to toll bridges on autoroute 25 and autoroute 30, and to the ferry services of Société des traversiers du Québec as of January 1, 2016.</td>
<td>STQ/MTQ</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Review the Construction Code to provide for the installation of charging stations in new residential buildings</td>
<td>RBQ</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Modify the Highway Safety Code to allow low-speed vehicles to travel on public roads**</td>
<td>SAAQ/MTQ</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Modify the Highway Safety Code to regulate access to parking spaces equipped with charging stations for electric vehicles**</td>
<td>MTQ</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Modify the diesel compensation program for school buses</td>
<td>MEESR</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Implement measures to support urban planning favouring ecomobility:</td>
<td>MAMOT</td>
<td>2015-2020</td>
</tr>
<tr>
<td>• Program for the sustainable development of communities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Distribution of development tools intended for municipalities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adopt new government policy directions in land use planning that will promote transportation electrification</td>
<td>MAMOT</td>
<td>2015-2020</td>
</tr>
</tbody>
</table>

* Because these measures are part of normal government operations, no specific budget will be allocated for them.

** Pending approval of the bill by the National Assembly.
## Lead by Example

<table>
<thead>
<tr>
<th>Measures</th>
<th>M/A Resp.</th>
<th>Amount (in millions of dollars)</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proceed with the electrification of the government's fleet</td>
<td>CGER</td>
<td>15</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Install public charging stations in government buildings</td>
<td>SQI</td>
<td>-</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

## Promote Electric Vehicles and Government Action

<table>
<thead>
<tr>
<th>Measures</th>
<th>M/A Resp.</th>
<th>Amount (in millions of dollars)</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a government communication strategy and implement the Action Plan</td>
<td>MTQ</td>
<td>6</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Support awareness initiatives for electric vehicles carried out by external partners</td>
<td>MERN</td>
<td>2.6</td>
<td>2015-2020</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8.6</td>
<td></td>
</tr>
</tbody>
</table>

## Total Costs of Measures to Create a Favourable Environment

<table>
<thead>
<tr>
<th>Priorities</th>
<th>Amount (in millions of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propose the implementation of a legislative and regulatory framework promoting transportation electrification</td>
<td>-</td>
</tr>
<tr>
<td>Lead by example</td>
<td>15</td>
</tr>
<tr>
<td>Promote electric vehicles and government action</td>
<td>8.6</td>
</tr>
<tr>
<td>Total</td>
<td>23.6</td>
</tr>
</tbody>
</table>
CONCLUSION

The Transportation Electrification Action Plan 2015-2020 illustrates the gouvernement du Québec’s desire to consolidate the efforts that have been made in the transportation electrification sector in recent years.

Through this plan, Québec intends to go even further in building on its strengths to solidify its position as a leader in electric transportation.

Transportation electrification serves as an important lever in economic development by raising the level of knowledge in leading-edge sectors and creating jobs in value-added activities. It also represents a powerful tool for reducing GHG emissions in Québec.
In summary, the Action Plan proposes a series of concrete measures that will help make Québec a major green economy in North America by 2020.

**HELP MEET THE AMBITIOUS TARGET THAT QUÉBEC HAS SET FOR REDUCING GHG EMISSIONS:**

- by focusing on transportation electrification, as the government is working actively to decrease GHG emissions in the transportation sector, which remains the largest GHG emitter in Québec.

**ILLUSTRATE OUR EXPERTISE:**

- by implementing programs designed to provide support for demonstration projects in public transportation and freight transportation given that, in the transportation equipment industry, demonstration in real-life situations is a crucial step for gaining access to markets.

**STRENGTHEN THE EXPERTISE OF OUR BUSINESSES AS WELL AS THE SKILLS OF OUR LABOUR FORCE:**

- by supporting collaborative industrial innovation projects in the fields of transportation electrification and intelligent transport systems, given that a close working relationship between industry and research institutions is a key factor for success where innovation is concerned;
- by supporting SMEs in their efforts to acquire, implement and market equipment and technology that can reduce GHG emissions;
- by providing training through a certificate of college studies in transportation electrification and a 15-credit graduate program, given that having a qualified labour force capable of understanding the technology and grasping the challenges facing the sector will help our businesses be more competitive.

**LEAD BY EXAMPLE:**

- by supporting pilot projects involving the electrification of taxi fleets, an undertaking that presents a number of challenges, including the need to test such vehicles before they can be rolled out on a large scale;
- by implementing a program to support the purchasing of electric school buses in order to encourage school bus operators to make the transition towards electric vehicles.

**CONSOLIDATE OUR PROGRESS:**

- by allocating an additional $25 million to the “Roulez électrique” program to encourage SMEs to make electric vehicles a part of their fleets;
- by setting up fast charging stations along major roadways;
- by supporting the implementation of charging stations at multi-unit residential buildings, at new office buildings and for on-street parking in order to compensate for the difficulty in accessing a power outlet in urban areas.

**STAND OUT ON THE NATIONAL AND INTERNATIONAL SCENES:**

- by supporting the hosting of international scientific and technical events, including the Electric Vehicle Symposium, considered to be the largest international forum on electric transportation, which the city of Montréal will be hosting in June 2016.
LIST OF PARTICIPATING MINISTRIES AND AGENCIES

- Centre de gestion des équipements roulants (CGER)
- Hydro-Québec
- Investissement Québec
- Ministère des Transports du Québec (MTQ)
- Ministère du Développement durable, de l’Environnement et de la Lutte contre les changements climatiques (MDDELCC)
- Ministère de l’Énergie et des Ressources naturelles (MERN)
- Ministère de l’Économie, de l’Innovation et des Exportations (MEIE)
- Ministère de l’Éducation, de l’Enseignement supérieur et de la Recherche (MEESR)
- Ministère des Affaires municipales et de l’Occupation du territoire (MAMOT)
- Régie du bâtiment du Québec (RBQ)
- Société de l’assurance automobile du Québec (SAAQ)
- Société québécoise des infrastructures (SQI)