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Chair

Mr. Larry Miller

Standing Committee on Transport, Infrastructure and Communities

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● (1100)

[*English*]

The Chair (Mr. Larry Miller (Bruce—Grey—Owen Sound, CPC)): We'll call the meeting to order.

I would like to thank our witnesses for being here today. We also have two witnesses joining us by video conference: Mr. Binns and Mr. Wolf.

We have, as I said, a number of presenters today. We normally go ten minutes. If any or all of you can cut that down to seven minutes to leave some time for questioning, it would be beneficial. I won't cut you off at seven minutes. I just ask you to try to be brief and to the point in giving us information that's valuable. I will be cutting your presentation off at ten minutes, so whatever you want to get in there, try to get it in.

Sometimes there are glitches in technology, so I'm going to ask that Mr. Binns and Mr. Wolf lead off the presentations, starting with you, Mr. Binns.

Mr. George Binns (Equipment Engineer, Paladin Consulting): I'm doing this in cooperation with Mr. Fuller. Is he present?

The Chair: Yes, Mr. Fuller is here. I wasn't aware of that.

Mr. Fuller, do you want to lead off, then?

Mr. Garry Fuller (President, GF Rail Consulting): Very good.

In your opening document, you spoke of lightweight, aerodynamic, intelligent types of vehicles, and the efficiency of existing transportation networks. We feel—it's our belief—that the present-day technology really lies with off-the-shelf European-design equipment.

For this discussion, we do not define existing transportation networks as subways, high-speed rail, or long-haul VIA or Amtrak types of operation.

We believe that the biggest benefits lie in the ability to move people from outlying points across areas directly into larger cities, either through high-speed rail, subways, or long-haul. This can be accomplished by utilizing European-designed DMUs.

In the United States, New Jersey Transit is considered to be one of the larger transit operators. In 2008, prior to the recession, because of the fact that they had a lot of diesel- operated transit equipment, the impact on their budget, if the cost of diesel fuel rose 1¢ per gallon, was $360,000 U.S. Also back in 2008, prior to the recession, the study they did stated that if gasoline went from $3.25 a gallon, or 85¢ per litre, to $3.50 a gallon, or 92¢ per litre, this is the point at which people would stop driving automobiles and ride the transit equipment.

This is from their board meeting documentation issued in March of 2011.

You can see that now, four years later, we're talking about the cost of gasoline as being $1.23 a litre, and in some cases in the United States over $5 a gallon. Your Calgary mayor last week put out a document that stated he would need $8 billion for the future transportation needs of the city of Calgary.

In operations, if you're moving in this direction, what we'd like to see you do is choose a European style of design rather than a Canadian or United States design. The reason for this is that the type of equipment they manufacture has a lighter-weight design, and therefore, because of this lighter weight, it has a better fuel economy. It also has lower maintenance costs. The reason for the lower maintenance costs is that they don't require what we would term and classify as the “bells and whistles”. They do require some, but far less than in the United States or Canada.

They are more technically advanced because they have concentrated on moving people via trains and via DMU-type operations. DMUs are not new to them. I first rode one from Marseille to Aix-en-Provence in the 1980s. It was a very slow but very efficient type of operation.

Because of the fact that their designs have been progressing along the lines of rail transit rather than airline transit, they have a lot longer longevity with them. They have a greater off-the-shelf availability. One of the things you see in North America, when you go to a request for a proposal for a design of new-style type of equipment, is the length of time it takes for the equipment to be engineered to meet the standards in North America. Consequently, what you also will see, or should see, is lower origination costs. As well, because this equipment is simple in design, you get a greater variety of design.

That's how we see where you're at in 2012.

In the second part of your statement, you're asking what the obstacles are that are incorporated with this.

● (1105)

The greatest obstacle that we see is what we call “mixed right-of-way”. You have to separate the freight from the passenger. The minute you attempt to separate the passenger and the freight, this is where everything starts to break down. This is where the rules come into consideration. This is where regulations come into consideration. Because of that, you can understand that there's a need to find methodologies for how to compensate for this.

George.

Mr. George Binns: Another barrier is that here in the United States we have introduced a series of strength or safety standards, referred to as Part 238. Most of this equipment is built to an international UIC standard, which is substantially less than the U.S. standards, but in order to build to U.S. standards it requires considerable engineering redesign of the equipment in order to bring it on board in the U.S.

I'll throw in another thought here. Currently there's a lot of activity regarding crash energy management. It substantially changes the design of the equipment. The U.S. is putting thresholds up there that are some of the highest in the world, and that creates another barrier to the introduction of these already standard designs from both Asia and the U.S.

Mr. Garry Fuller: Your final question is what the Government of Canada can do to enable advances. We believe that the biggest thing you can do is to institute regulations and allow for what we call temporal separation. Temporal separation was first tried in the United States under what we called the River LINE. I do believe you all have a copy of a document I sent to you earlier entitled “The River LINE”.

The River LINE is a service that was originated in 2004 on the east coast, from Trenton to Camden, New Jersey. They made an agreement with the freight operator to operate the passenger service, the DMUs—not what we would term the Colorado DMU but the European-style DMU—during the day, and then the freight service operates at night. It's quite a transition from what you see elsewhere, where you have the freight and passenger services going hammerhead together and all that.

Their ridership is excellent. They show profitability. They have the same types of DMUs that are used in Italy, the Netherlands, Austria, Greece, Slovakia, Germany, and Switzerland. The reason for that—and they're building them to do that—is because of the timing. They operate during the day; the freight operates only at night.

One of the things you can see in Canada, which I believe you'll probably see in the future, is what has taken place over the last 15 years in the United States, and that is the short-line operation. In the United States, the major freights, as they've consolidated, have gone to selling off a lot of their territory for freights to use as short lines. One of the things I would suggest is that if Canada moves in the same direction of having a lot of short lines, you allow regulation that when the short line is sold, it is patterned after what we call the River LINE. It will then give you the opportunity to do that.

● (1110)

Mr. George Binns: I can add that in the mid-1990s, Amtrak performed a series of demonstrations of European technology that included the X2000, the ICE Train, and the Talgo equipment, which really opened up the doors and started our whole process in the States. They were very successful, very well received. They actually included revenue demonstrations for periods of time. It sort of proved and took down barriers, but again, this is all equipment built to UIC standards.

One of the ways of protecting equipment is with the conversations you've heard recently about installing PTC. That inherently protects the equipment from collisions when you can't temporarily separate. I think that's the true approach to be taken with the introduction of these offshore standards.

Mr. Garry Fuller: Finally, the last thing is maintenance procedures. Because of regulations, if you do implement the European-style DMU, please do not incorporate massive maintenance instructions, rules and regulations, that therefore then will force you to build them to North American types of standards.

The Chair: Thank you very much.

Mr. Wolf, we'll turn it over to you now for ten minutes or less.

Mr. Jason Wolf (Vice-President, North America, Better Place): Thank you, ladies and gentlemen. It's a pleasure to be here.

The innovation and technology for transportation that I want to speak about is the revolution that's taking place on the electric vehicle side, with light-duty vehicles. We're seeing this around the world. Large numbers of models by all different types of auto manufacturers are coming into the market, but we're seeing one big obstacle to mass adoption. We've been with hybrid vehicles for 15 or 20 years, and we're only at about 2% to 3% of each market around the world.

The inherent effectiveness of electric vehicles allows us to move much more rapidly. Of course, it's not something that's going to happen overnight, but in the next 5 to 10 years we can see a mass adoption of 100% electric transportation. The only two barriers are their high cost and their range. We believe the secret to solving both the upfront cost and the range of an electric vehicle is the separation of the battery from the vehicle.

When you look at an electric car and the fuelling infrastructure that surrounds it, and you include a removable battery in that infrastructure, suddenly you get a cost per kilometre that is cheaper than gasoline, you get an unlimited range because of the ability to swap out that battery in less time than it takes to fuel a car, and you get the financial benefit of removing the equivalent of eight years' worth of petrol from the upfront cost. So you get the upfront cost benefit by removing the battery, you get the ongoing mile cost broken down, so it makes sense on an ongoing mile basis, and you get the ability to refuel in less time than it takes to fuel a petrol car.

So how do you put all those pieces together? There are a number of business models out there and companies are working in coalitions with car companies, battery companies, the electric-fuelling infrastructure, and mainstream utilities to put together these systems. It's kind of a chicken and egg situation. Once you put these systems together, where you have the cars, the batteries, and the fuel, which is the electricity, and in Canada it is generated mostly from renewable sources, you can make a huge leap towards a more affordable transportation system. You can have an unlimited and no-compromise system in the light-duty vehicle sector.

I think this is possible. This is a technology that exists today—it is not the technology of the future. We are a company that was founded five years ago. We built two country-wide networks and raised over $800 million in private money. This money was funnelled to countries where the price of petrol is $2 a litre versus $1.40, as I understand it is in Canada. There is a lot of private money that will run after this type of solution and enable this mass adoption, but of course it's going to go where you find the highest level of competition and the highest price of gasoline.

That brings me to my last comment about recommendations. I wanted to leave some time for questions because I know this is a very revolutionary thought. There have been a few years of proof-of-concept countries where you can drive anywhere in the country and you're not paying more for driving on electric. Needless to say, in this type of forum people understand the economic, environmental, and geopolitical implications of moving from a fossil fuel to a locally generated renewable electricity.

The reason that our company, Better Place, has chosen these countries is that they have the biggest return for our private shareholders—$800 million, as I mentioned, of private money from HSBC, Morgan Stanley, and other major financial institutions.

● (1115)

My recommendation to the Canadian government is to look at why the capital flows will go the same as the U.S., why they will flow to countries where there's a higher price on carbon. Even without resetting taxes or carbon prices, there might be ways to offset some of the initial investments that go into these infrastructures, because at the margin, even at $1.40 per litre, this business model is still profitable. The question is, at what decade will the private investors decide to focus their attention on countries that have half the price of gasoline to compete with?

Those are my comments, and I wanted to leave some time for questions.

The Chair: Thank you very much, Mr. Wolf.

We'll now move on to Bombardier Inc., Mr. Pyun.

[*Translation*]

Mr. Pierre Seïn Pyun (Vice-President, Government Affairs, Bombardier Inc.): Thank you, Mr. Chair, members of the committee.

It's a pleasure to be here to discuss rail transportation technologies with you.

● (1120)

[*English*]

Thank you for inviting Bombardier. It's a pleasure to be here with you this morning to share our perspectives and views on rail technologies and innovation. I will make a few introductory comments before passing the torch to my colleague, Mr. Paul Larouche.

I'll give you an overview of Bombardier Transportation. As you know, we have two large business units, aerospace and transportation. I guess rail transportation here in Canada may be the lesser known side of our operations, despite the fact that we are the number one rail equipment manufacturer in the world.

Bombardier Transportation has 62 production and engineering sites in 25 countries and a workforce of 36,200 employees. We have customers and services in more than 60 countries. We are the only global rail manufacturer with a strong important presence here in Canada, with a workforce of more than 3,000 highly qualified employees. We have two manufacturing sites, one in La Pocatière, in the province of Quebec, and one in Thunder Bay, in the province of Ontario. We have major engineering sites in Saint-Bruno and also in Kingston. We also have a service centre, serving customers across North America in Mississauga. Our headquarters for Bombardier Transportation North America, which also includes facilities in the United States and Mexico, is located in Saint-Bruno, in Quebec.

I want to underline that the company overall, rail transit and aerospace inclusive, is currently going through a very intense period of research and development, probably unprecedented in our history for its intensity and scale. Over the last five years we have invested more than $2.7 billion in our Canadian operations, including plants, property equipment, tooling, intangible assets, and R and D as well. For instance, on the rail side, we have nearly doubled our workforce in Kingston in the last few years, and we have established a new engineering centre in Saint-Bruno, Quebec.

[*Translation*]

I will now turn things over to my colleague Mr. Larouche.

Mr. Paul Larouche (Director, Marketing and Product Planning, Bombardier Transportation North America, Bombardier Inc.): Thank you, Pierre.

Good morning, ladies and gentlemen.

[*English*]

Before I get into my prepared remarks, I can't help but point out, in support of Messrs. Binns and Fuller, a beautiful example of temporal separation right here in Ottawa. If you just go up the street to Bayview Station, you can take a ride on the OC Transpo O-Train, which has been operating for many years now. They are Bombardier-built DMUs—diesel multiple-unit trains—that were built to UIC standards. They run on an active freight railroad and they use temporal separation, and they actually also cross the Canadian Pacific railroad, I believe.

[*Translation*]

We are here today to discuss innovation, a top priority for Bombardier, a company that would never have existed had it not been for innovative ideas. This innovative thinking changed the face of traditional transportation. Thanks to the genius of Joseph-Armand Bombardier, a rural Canadian business grew into a world leader in the aerospace and rail industries.

Up against global competition, today's businesses are under mounting pressure to deliver value-added products and services. It is clear, then, that we can never stop innovating if we are to continue providing customers with cutting-edge products. Our customers represent the world's major hubs, and more and more they must contend with significant social and environmental concerns, such as climate change, urbanization, population growth, resource shortages, rising energy costs and road congestion. That is why we focus our innovation and research and development activities on creating the technologies for tomorrow's mobility solutions today.

[*English*]

In recent years, many innovations in a variety of fields have been brought forward in passenger rail vehicles.

First of all, to increase passenger safety, we've developed predictable crash energy management concepts that reduce the impact forces on passengers in case of collision.

I have to mention that one of our best customers, GO Transit, has gone forward and procured some commuter cars that include crash energy management, even though this technology isn't required by any regulations in Canada. As previous speakers mentioned, we're seeing this take on more importance in the U.S. GO Transit will be the first with a Bombardier crash energy management commuter car.

Second, to reduce energy consumption, we've introduced in our vehicle designs regenerative braking systems. They save electrical energy otherwise wasted as heat during braking and feed the power back to the network grids. As Mr. Wolf referred to, if the line is not receptive to this energy we're trying to pump back, we have energy storage devices either on board the vehicle or on the wayside so that it can be re-used for the next acceleration cycle of the vehicle.

Third, we've developed improvements to enhance the performance of the trains we build. Among other things, the introduction of the latest technology power modules has allowed lighter trains with the same power levels.

Finally, to improve the passenger experience and help bring more riders to economical and efficient rail transit, we've introduced visual electronic communications and entertainment systems so that passengers have access to accurate and pleasant information. We've also developed highly efficient heating, ventilation, and air conditioning systems that are now able to adjust to changing environmental conditions and, more importantly, to passenger load. We just heat or air condition enough for the actual passenger load.

● (1125)

[*Translation*]

All of these innovations are part of Bombardier's strategy to develop its ECO4 technology portfolio, which is geared towards making rail transportation more cost-effective, efficient and ecological, while optimizing its energy use. As a result, we are conducting research in four main areas.

First of all, by introducing smart systems into our vehicles and rail infrastructure, we are working to build integrated networks that operate more efficiently thanks to the ongoing exchange of information. One way Bombardier is doing that is by building its expertise on the development of train control and management systems. For example, our ORBIFLO product gives operators access to the real-time exchange of information on adherence to timetables and energy consumption.

Also part of that repertoire are systems such as EBI Drive, which constantly advises train operators on how to optimize energy efficiency, similar to how a driver's spouse would assist if the driver were speeding.

Second, we are working on manufacturing trains using lightweight materials. Doing so allows us to offer customers a competitive edge by helping them reduce their energy consumption. Using expertise gained at our plant in La Pocatière, Quebec, we are constantly enhancing how we manufacture lightweight body structures through the use of high-tech laser welding and composite materials. Those were the types of materials we were able to show you when you visited, Mr. Aubin.

On top of that, we are aiming to introduce new bogies—in other words, the wheels beneath the cars—that are much more lightweight, such as the FLEXX Eco, which results in a 30% reduction in total bogie mass and unsprung mass.

[*English*]

Third, the introduction of state-of-the-art infrastructure is necessary to take transportation a step forward. In that regard, Bombardier is continuing the development and introduction of its game-changing primove wireless power supply system. It will allow light rail vehicles, streetcars, and even electric buses and cars to get power through magnetic induction, without the need for unsightly overhead wires. It's just like your toothbrush recharges without any actual electrical connection.

Finally, through the introduction of inventive train concepts, Bombardier will continue to lead the pack. Incremental high-speed rail travel in North America can be achieved in the very near future with design concepts based on service-proven technology available from Bombardier and other car builders.

Our ALP-46A electric locomotive can be coupled to our high-capacity, multi-level coaches to achieve acceleration to 200 kilometres per hour, the speed needed today for intercity travel.

The Chair: I'm going to have to cut you off there, Mr. Larouche, but I'm sure you can add that in during questioning.

Thank you very much.

We'll now move to the engineers of Quebec, for 10 minutes or less, please.

[*Translation*]

Mr. Etienne Couture (President, Réseau des ingénieurs du Québec): Mr. Chair, honourable members of the committee and distinguished guests, thank you for hearing from the Réseau des ingénieurs du Québec this morning.

We see the committee's work today on innovative transportation technologies as a golden opportunity to set out a sustainable transportation strategy for the country.

Now more than ever, Canada must come to terms with a global economy requiring that it take action to ensure its energy security and supply. The country's energy performance depends heavily on the transportation sector, so that is where we must start.

Who do we call on first when we need technical solutions to issues related to transportation and sustainable development? Engineers. So that is why the Réseau des ingénieurs du Québec is developing tools to support engineers as they endeavour to address challenges, particularly as regards energy.

The Réseau des ingénieurs du Québec has a vested interest in these issues, given its mission to value, serve and promote its 60,000 engineers working in every specialty throughout Quebec.

In 2009, the Réseau des ingénieurs du Québec released a major study on sustainable energy development in Quebec. As a result, we worked with the Quebec government on a plan of action to develop and use electric vehicles.

Today, we are recommending two approaches, given that they use existing transportation networks and are likely to enhance our industrial base and trade potential. The two approaches are electric vehicles, and the use of second generation biofuel in traditional vehicles and hybrid vehicles.

These approaches would benefit Canadian society, especially because of the prevailing economic, political and environmental landscape around the world. Here are three key pieces of information.

Canada imports a tremendous amount of oil. In June 2012, Statistics Canada observed that nearly 40% of Canadian refinery needs were met through imports. Quebec alone imports almost $15 billion of crude oil a year. That jeopardizes Canada's economic security and transportation sustainability, given that global demand exceeds supply.

By supporting electric transportation while producing oil, Canada can safeguard its oil and gas reserves and continue to export a significant portion. This would allow Canada to improve not only its energy security, but also its trade balance.

The use of combustion engines is sustainable only in the short term, not in the long term. The resulting emissions are partly responsible for our greenhouse gas production and are harmful to people's health.

Lastly, Canada is rich in electric resources. For instance, according to Hydro-Québec, if we were to replace 25% of gasoline-powered cars with electric vehicles, the electricity consumed would correspond to just 2% of electricity sales in Quebec and greenhouse gas emissions would drop by 3.4 million tonnes. Bear in mind that a Chevrolet Volt does not consume any more electricity than a water heater.

The transition to electric vehicles is necessary and would lower Quebec's oil consumption for road vehicles by 60% within 20 years. Such targets have yet to be set for the entire country.

In 2010, we made 35 recommendations on sustainable mobility, some of which have already been included in the Government of Quebec's 2011-20 electric vehicle action plan. The first area that needs attention is the urban transportation of people and goods; this sector clearly offers the most potential for electric vehicle market penetration.

Priority should be given to three areas.

The first is the widespread use of personal electric and hybrid plug-in vehicles and the integration of a network of public and residential charging stations. Almost all the technology is available. Even though battery performance and cost remains a major challenge, product quality continues to improve. For instance, IREQ developed a new nanotitanate lithium battery exceeding a range of 150 km.

The second area is the replacement of institutional fleets servicing areas limited by electric and hybrid vehicles because battery range is not a concern.

The third area is the electrification of public transportation networks. City buses pose an interesting challenge. To avoid an increase in electric wires and the resulting inflexibility of routes, we recommend implementing electric bus networks where buses can recharge periodically at stations located at regular stops along the way. This option would not affect the route or take very long.

● (1130)

In terms of rail and intercity transportation, we believe that the concepts of suspended monorails and high-speed trains should be explored. According to some proponents, it would be possible to develop a suspended monorail with cars that would be powered by wheel motors reaching a speed of 250 km/h and that would be able to easily go over uneven terrain with a reduced footprint, and along existing highways. Although detailed engineering for the high-speed suspended monorail still needs to be done, it is worthwhile to conduct further feasibility studies, considering the model is adapted to the northern climate and it has many potential benefits.

Our second recommendation has to do with the use of biofuels. Electrification is the best option, but some specific transportation needs require other solutions. As a result, the Réseau des ingénieurs du Québec would like to see targeted measures for increasing the use of alternative fuels. We could actually integrate up to 10% of the second and third generation biofuels into petroleum fuels by 2020, promoting the use of biogas, compressed natural gas and propane in captive vehicle fleets.

We also suggest that the federal government, along with the provinces and municipalities, take action to support the objectives described earlier. The purpose of those incentives is to stimulate demand for the benefit of emerging industries. So we are talking about financial support for creating industrial clusters around innovative transportation technologies intended to raise the market shares of Canadian companies in the value chain of targeted industries, including that of electric vehicles.

Canadian expertise is particularly strong in the production of public transit vehicles, with Bombardier for example, and of vehicle components, such as batteries and wheel motors. This expertise has to be supported so that Canada has its own leading industry that can supply world markets. Quebec could easily be home to a Canadian research institute for electric vehicles that would be in charge of coordinating a network of excellence across the country.

We also recommend that budgets for public fleets and infrastructures be increased, as long as there is a transition towards clean technologies. The federal government has considerably increased its investment in public transit infrastructure across the country. However, this step forward would be even more profitable for the Canadian economy if the government took the opportunity to support projects promoting lower energy footprint technologies, and to encourage discounts for people who buy plug-in hybrid and electric vehicles. That would complement provincial policies, the way it is done in the United States.

To date, Canada is the only G20 country whose federal government does not contribute to a program like that. We have to find a way to make sure that, with the auto industry going electric globally, Canadian industries that are part of the supply chain for those new vehicles can benefit.

To conclude, the transportation sector in Canada includes many economic operations that are an integral part of our society. But it uses up a whole lot of energy. So it is crucial to make improvements. Together, we have to make choices that will enable Canadians to move towards sustainable mobility.

Thank you.

● (1135)

[*English*]

The Chair: Thank you very much.

We'll now move into questions.

I'll just remind the witnesses and our committee members that your questions and answers are to be within the seven minutes in the first round before we go to the five-minute round.

Ms. Chow, you have seven minutes.

Ms. Olivia Chow (Trinity—Spadina, NDP): This question is for Bombardier.

You were about to tell us what you recommend the federal government should do to increase train services, passenger train services, and especially electric train services in Canada. I'm totally jealous when I travel abroad. I've ridden on many Bombardier electric trains, but outside of Canada. What are some of the regulations we can change in order for that to happen here in Canada more often?

Mr. Paul Larouche: One of the things I was about to mention, another technology that we can make available.... As Mr. Wolf pointed out, electrification takes time. Electrification of transportation networks takes time. You can't do it overnight, so you have to have some kind of time-based plan, a plan to incrementally electrify your networks.

In Montreal, as well as in New Jersey, we've introduced a new dual mode locomotive, our ALP-45DP, which can operate as a fully electric locomotive in electric territory. Once you reach the limits of the electrification, you can seamlessly switch over to diesel power. The passenger doesn't even notice. You can be offering seamless service as you progressively electrify.

Rather than doing one gigantic project—the projects often get shot down because the price tag is too high—this technology allows you to go about it in a more incremental way and to progressively electrify.

Pierre, do you want to add anything?

● (1140)

Mr. Pierre Seïn Pyun: I guess the bottom line is that it's up to the government to decide whether they want to commit public funding —to investment in increasing speed, for instance, or making rail transportation cleaner.

I think you've heard that we have many options we can supply—not only us, but other manufacturers as well. We have experience all around the world, and we've seen many different types of technologies being used in Europe, in emerging countries, and in the United States. There are all these options. It's not a function of how advanced technologies are currently. They are very advanced and you have a wide range of available options.

We have some recommendations to make as well on ways to better support rail innovation in Canada. Would you be interested in hearing about these?

Ms. Olivia Chow: Yes.

Mr. Pierre Seïn Pyun: These were going to be part of my concluding comments, so I'm going to refer to my notes.

First and foremost, from a stakeholder point of view—and it's not only us, but the government research institutions and universities—I think we need to sharpen our innovation reflex. We need to dedicate people, resources, and budgets to developing new ways to create, produce, and sustain passenger rail transportation solutions.

The second point I would make is to call for an integrated road map to develop rail technologies, but over the long term, so going beyond the term of one government.

Associated with that, there are some short-term actions that need to be taken. Again, I'm talking about stakeholders in general, including the private sector, but also research institutions, universities, and governments at different levels.

The last point I would make is on the use of government procurement to support domestic innovation and manufacturing capabilities.

On that front, compared to what we've seen in other jurisdictions, the company thinks that Canada may be lagging. Use considerable public infrastructure investment as a policy lever to promote innovation in Canada. That goes to the way projects can be spec'd, for instance, to encourage the use of the smart technologies, clean technologies, that we have been talking about. The added benefit, besides innovation, is also the lever to improve the sustainability of our large cities in Canada.

Maybe there is room to spec projects based on performance-based requirements instead of very strict design requirements, for instance. This is one view that we would put forward for the committee's consideration.

I said it was my last point, but I have a real last point to make, and that goes back to the road map comment I made. I think an integrated framework, if possible, would include U.S. partners as well. It would make a lot of sense. I think we want key technologies to be usable on a larger scale in North America. Models exist, and one that I would point out is in Europe, where the European Rail Research Advisory Council plays this role.

The Chair: You have 45 seconds, Ms. Chow.

Ms. Olivia Chow: Okay.

Mr. Wolf, in 45 seconds, do you want to talk a little more about the offset in terms of the infrastructure and the pricing, and how Israel managed to have such huge success in electric cars? Is it the stations or is it the investment? Perhaps you can describe that very quickly.

● (1145)

The Chair: You have less than 10 seconds, but try.

Mr. Jason Wolf: It's a question of capital. I think it's a very simple question, because today, at least in the light-duty vehicles, there is an economic advantage to electric miles, electric kilometres versus gasoline.

The problem is, it's as you describe. It's not about charging infrastructure or the batteries or the cars or the energy; it's about putting a system together that can replace the old one. Look at what happened with mobile phones. It took about 20 years from the time mobile technology existed until the policy environment was right for massive deployment of mobile phones. It wasn't that the technology didn't exist; it's just that people didn't understand the paradigm going from a home land line to a mobile phone. With cars it's the same thing. We've had 80 years of refining oil, sending oil to gas stations, sending it to combustion engine cars. Now we've got a cheaper way to do it, but the business model and putting the technologies together didn't exist in one place.

To your point about Israel, Israel didn't provide anything financial. It had a price on petrol of $2 a litre, which is a benefit for a private company. Then private companies, we and our partners—Renault, the utility, the service providers around insurance and finance—came together and put the entire network on private dollar, 100% private dollar, across the entire country. So anybody can drive today from any point to any point in Israel with the same convenience as they do with gasoline, with less cost to the consumer. It becomes a no-brainer, and I think that type of model—

The Chair: I'm going to have to cut you off there, Mr. Wolf.

Mr. Coderre, you have seven minutes.

[*Translation*]

Hon. Denis Coderre (Bourassa, Lib.): Thank you, Mr. Chair.

Gentlemen, thank you for joining us today.

Over the past few months, we have heard people advertise their batteries or say that we have to use propane gas, or methane, or electrification. I understand all that. Everyone is doing their own thing. Mr. Wolf said—and I agree with him—that it is about systems, transition and integration. That is where we are at.

The feds have a role to play. They have already invested quite a lot in this. Regardless of the government, the relationship with Bombardier is fantastic, particularly in terms of developing certain modes of transportation.

Today, during my seven minutes, I would like us to talk about regulations and about how the Canadian government can fully play its role as a partner. We are talking about smart regulations that are applied properly. Is it only a question of money? We are actually going through an economic crisis and taxpayers have to be respected. However, I certainly agree with you in saying that it is not an expense, but an investment.

What do we have to do in terms of safety and regulations? Since we are at the Standing Committee of Transport, imagine that you are the Minister of Transport. He has a role to play. It might have to do with research and development in the industry, but let's stick to transport. You talked about infrastructures. I could go back to that topic. If you each had a recommendation to make in terms of regulations, would it have to do with the integration of markets between Europe, Canada and North America? Are we better served by strictly limiting ourselves to North America? I don't think so.

Mr. Couture, you may start. Tell us in a few sentences what the role of the federal government is and what your recommendation is. I don't just want to hear about money.

Mr. Etienne Couture: Certainly. Thank you, Mr. Coderre.

The first thing to do is to create a Canada-wide sustainable mobility strategy. This system switch is obviously not going to get done by itself. First of all, we need leadership, which is lacking at the moment.

Hon. Denis Coderre: In practical terms, you would like to see a federal-provincial-territorial conference led by the Minister of Transport, Infrastructure and Communities, that would come up with an integrated version, complying with the various jurisdictions. Is that right?

● (1150)

Mr. Etienne Couture: Well said, well put.

Hon. Denis Coderre: In that case, I will end up joining the Réseau des ingénieurs du Québec.

Mr. Etienne Couture: Oh, oh!

Since you are talking about regulations, it must be said that we are also looking for specific incentives that can be applied right now. For instance, the so-called bonus-malus system would encourage electric vehicle purchases and would discourage petroleum vehicle purchases. In those cases, consumers would have a choice to make where, economically, the green energy option would be more appealing than the option of buying a model that they have seen before.

Hon. Denis Coderre: Mr. Seïn Pyun, Bombardier is an international leader. You are around those models every day and you must be dealing with many governments. In your view, what should the role of the Canadian government be in what we are currently looking for?

Mr. Pierre Seïn Pyun: We would support the idea of better integration nationally and provincially. It depends on the type of technology we are talking about.

For example, if we are talking about the public transit system in urban areas, what we see in Canada, as well as in other countries, is a lack of integration. There is a lot of room for saving money and for improving the operational effectiveness by aligning the requirements of cities that get rail equipment from public markets. The funding often comes from the same sources. We feel that the federal government should use levers to encourage a better integration of requirements between Canadian cities.

Hon. Denis Coderre: When you talk about integration and procurement policy, are you also referring to the made-in-Canada procurement legislation, or are you simply trying to make sure that we are all on the same page in terms of needs and equipment planning, for example?

Mr. Pierre Seïn Pyun: We don’t want to seem protectionist. Our company is export-driven. As a matter of fact, 93% of our revenue comes from markets outside Canada. We depend on exports.

However, in the rail sector, you have to realize that there are ongoing challenges around the world. There are local content requirements everywhere. You are well aware of what is happening in the United States, in Europe and in emerging markets. That is the reality we are faced with and that forces us to localize our production. We believe that Canada has some production sites that should be considered when purchases are made.

[*English*]

We're not saying we want free deals from the government. I think we have to compete. But this is the challenge we're facing in all the markets in which we operate.

Some consideration has to be given to what we value here in Canada: technologies being developed here and jobs being created here. We feel very confident that we can compete on the basis of our technologies in commercial terms, but we should not give up our capacity to develop technologies and invest in rail technologies here in Canada.

Hon. Denis Coderre: In a few words, Mr. Fuller, regarding regulation, I noticed that you spoke about the importance of being at the same level as those in Europe, and you said we have to make some choices depending on the rail and all that. If you were the Minister of Transport, what is the first thing you would have to do to make things happen?

The Chair: Be very brief, Mr. Fuller. Just name the regulation change that you would see.

Hon. Denis Coderre: The question was good, so the answer will be great.

Mr. Garry Fuller: I would re-evaluate what the FRA calls Rule 238. I would not impose that upon Canada at this time.

The Chair: Mr. Adler, you have seven minutes.

Mr. Mark Adler (York Centre, CPC): Thank you, Mr. Chair.

I want to welcome all of the witnesses here today. This is a very important discussion we're having.

I want to kick things off by getting a few items dealt with off the top, which I hope will enlighten my friends across the way from the NDP.

I'd like to ask the panel what an increase in corporate taxes, an imposition of a carbon tax, and a policy of no free trade agreements would do for your businesses. Would these be helpful of hurtful?

Let's start with Mr. Hébert.

● (1155)

[*Translation*]

Mr. Etienne Couture: I can answer that question.

There would be no interest in imposing corporate taxes for the benefit of Canadian companies. In terms of carbon emissions, we have to promote everything that can motivate Canadians to use green technologies. Does that mean that we are going to impose a carbon tax or, as I said earlier, promote green technology? It might be one and the same thing. I will let you be the judge of that.

For us, the number one priority is to send a clear message that the Canadian government is definitely a leader when it comes to switching to electric transportation and green technologies.

[*English*]

Mr. Mark Adler: That doesn't answer my question, though: would it be helpful or hurtful to your business?

[*Translation*]

Mr. Etienne Couture: I am not able to answer that question directly.

[*English*]

Mr. Mark Adler: Okay.

Bombardier?

Mr. Pierre Seïn Pyun: I have just a couple of points.

We operate in many different jurisdictions with many different regulatory environments, so I think we're well positioned to adapt ourselves and offer options, regardless of the regulatory environment that is in place in countries in which we do business. In some places, there are more stringent environmental regulations, and we can cope with them.

Certainly—and I've made this point—we would put forward the view that there's scope here in Canada to encourage in public procurement the greater use of smart and clean technologies, but I think it has to be done in a way that risks are managed and by being conscious that you want to provide the best value for taxpayers.

On free trade, I made the point that exports are very important for us, but in the rail transit business it's very decentralized, because the business model is very much around specific projects. I mentioned the challenge with the local content requirements we're faced with everywhere in the world, which compel us to localize our production to a great degree.

Free trade is important because a lot of benefits can be derived from free trade agreements. For instance, for a global company like Bombardier, anything that facilitates business mobility would be very helpful to us, and anything that facilitates exports of goods and services would be very helpful to us. But in general, in the free trade agreements that the Canadian government negotiates, I think we would advocate for a balanced outcome with genuine reciprocity.

Mr. Mark Adler: Thank you.

Mr. Fuller, please, just quickly.

Mr. Garry Fuller: I'll give you an example. In 1994 I did a contract with a Canadian railway and a U.S. manufacturer. Right now, Transport Canada has a rule stating that I do not have to do inspections of equipment every 92 days; I do it every 180 days. In the United States, you have to do it every 92 days. Because of your ruling, we were able to negotiate lower pricing for intra-Canadian railroading. Also, I think that last regulation is more important to you.

Mr. Mark Adler: Thank you.

I want to direct my questioning to Bombardier, if I may. Bombardier is probably the best example of a Canadian success story. The company started in 1946. Bombardier Aerospace, located in the great riding of York Centre, which I'm so fortunate to represent, employs over 4,000 people and, indirectly, 9,000 throughout the GTA. It's the largest private sector employer in the GTA. It's a cutting-edge company that has never lost its entrepreneurial spirit. It started from the production of a Ski-Doo, really, and now is a global company with $18.5 billion—it sounds like I'm giving you a commercial—in total revenues.

Could you speak about that sort of culture within Bombardier to keep striving for this excellence, striving for innovation, and striving for being the best that you can possibly be in terms of a transportation company? Could you address it from that angle?

● (1200)

Mr. Pierre Seïn Pyun: Certainly. As you mentioned, we always strive to be ahead of the innovation curve, and that goes to the core of our competitiveness as a global firm. Whether it's in the rail transit business or in the aerospace business, we're constantly thinking about the next products we should put in the marketplace that will make sure the company is always at the forefront of what customers need.

I mentioned in some of my comments the intensity of the research and development investments we're doing now. There was a lull for a few years because a few years ago the priority was to put the company back onto a solid financial footing, but in the last three to four years we have been working on six new aircraft development programs on the aerospace side. That's a lot to take on.

In the investment community, people will wonder whether our risks are adequately managed. We feel very confident that even in this current economic downturn, we have to make those long-term investments. We're talking about the CSeries, the global aircraft manufactured in your riding. We have two new programs on the go, the Global 7000 and the Global 8000, new Learjet aircraft, and the same on the rail side. We constantly try to position ourselves ahead of the curve. Paul talked about the ECO4 technologies that are critical to the success of the company.

The Chair: Thank you very much.

Mr. Poilievre, for seven minutes.

Mr. Pierre Poilievre (Nepean—Carleton, CPC): The first question is for Mr. Fuller.

Is temporal separation something the government would have to regulate into existence, or is it something the government would allow to happen?

Mr. Garry Fuller: It's something I believe the government would have to allow to happen. I don't know what you did here in Ottawa, but in the New Jersey area, the transit purchased the old rail line. When they did that, they negotiated with the existing railroad as part of a temporal type of operation.

I'd have to look at your rules. I'd have to make sure which way you would go, but you can either regulate it from a federal standpoint or.... I don't know how to say which way would be the best way to go for you.

Mr. Pierre Poilievre: I guess I'm asking whether it is permitted right now under the rules. What's stopping it from happening?

Mr. Garry Fuller: The only thing stopping it now, I believe, would be a community wanting to have that type of service. That's the only thing probably that's stopping it. I don't know.

Paul, do you have any ideas?

Mr. Paul Larouche: In the case of the O-Train, OC Transpo and Bombardier had to demonstrate to Transport Canada that we had the technology and the processes in place to make sure that there's never any possibility of both types of trains being on the segment of railroad that's concerned here at the same time. Once we demonstrated that—

Mr. Pierre Poilievre: So that's allowed already.

Mr. Paul Larouche: It's not a regulatory obstacle, but there is some risk. What do I have to demonstrate? I'll be sitting in front of a Transport Canada person. How much is he going to require? Some kind of definition—

Mr. Pierre Poilievre: I'll be very specific. Is there any instance you're aware of where this has been prevented by Transport Canada?

Mr. Paul Larouche: No, but there's a certain element of commercial risk in the unknown. If there was some kind of regulation—

Mr. Pierre Poilievre: I understand that, but we can't control that.

● (1205)

Mr. Garry Fuller: In the United States we have Rule 213.345, and that's a rule whereby if we wanted to do this, we would have to run tests. We would have to run the test for the track and for the speed. The public would have to be involved with it and local legislation would have to be involved with it before we could do it in the States.

Mr. Pierre Poilievre: And here?

Mr. Garry Fuller: I would imagine the policy is probably very similar. You're talking about mixed traffic, and therefore what takes place is the safety of the people. That's the number one concern.

Mr. Pierre Poilievre: I realize that. I'm trying to be very specific about what we can do here. You want to use existing rail lines for mixed traffic, freight lines for passenger transportation. Is that right?

Mr. Garry Fuller: Not all, no. I'm speaking about smaller cities, for example; I'm not talking about transcontinental Canada. I'm not talking about major lines where you would run VIA-type trains and all that. I'm speaking mainly about the transit type of activity.

Mr. Pierre Poilievre: I'm simply having a hard time understanding what you want us to do for you.

Mr. Garry Fuller: I don't want you to do anything for me. What I'd like you to do for yourselves is be aggressive in the selection of European-style equipment, because their technology is so far advanced from what we have right now.

Mr. Pierre Poilievre: We're not buying any equipment. It's the private sector or the municipality running a transit line that would buy the equipment.

Is there anything in the regulations that prevents us from buying European-style equipment right now?

Mr. Garry Fuller: Right now you'd have to convince Transport Canada, I believe.

Mr. Pierre Poilievre: To do what?

Mr. Garry Fuller: Under the UIC type of rules, you'd have to buy that style. You wouldn't have to have the crashworthiness. There are a lot of different things that come into play.

Mr. Pierre Poilievre: So there would have to be an exception made in order to purchase that technology. Is that what happened with Ottawa's O-Train? Is there some sort of exception for it?

Mr. Paul Larouche: When you're demonstrating that there is no possibility of both types of equipment operating at the same.... During the temporary separation portion of the day, the regular rules don't apply. Since there is no possibility of the trains meeting, that doesn't cause a problem.

One thing I'd like to add is that many times people have asked me, “Why don't we have high-speed rail trains in North America?” I know that's not exactly the technology we're talking about here, but the answer for a long time has been that the North American rules did not allow the UIC equipment to be operated in North America. The Federal Railroad Administration rules, Part 238, which Garry referred to, have been preventing it.

The FRA moved at a glacial pace for 10 years—

Mr. Pierre Poilievre: Is that rule gone now?

Mr. Paul Larouche: No, for the past two years they've created.... The Transit Rail Advisory Committee for Safety has been there for a long time. They've created an engineering task force for the past two years.

We've been looking, along with the FRA, at what really happens if you mix and match European and North American designs. Now that the European designs include crash energy management technology and you have a lot of improved crash avoidance technology, it turns out that you can mix and match quite safely. Now they—

Mr. Pierre Poilievre: Is that allowed in Canada?

Mr. Paul Larouche: No.

Mr. Pierre Poilievre: Okay.

Mr. Paul Larouche: So a low-hanging fruit would be to look at what the FRA has been doing and adapt Canadian regulations in a similar way.

Mr. Pierre Poilievre: Can you draft a very precise proposal to that end, as quickly as possible? We're going to be having officials here on Thursday. I realize it's a tight timeline, but that's the reality. If you want us to have those proposals brought before our officials, we'll need to have them within the next 24 hours. We will ask them very clearly, and potentially we'll produce a recommendation favourable to that outcome.

How much time do I have?

The Chair: You have about two seconds, so you're out of time, Mr. Poilievre.

Mr. Sullivan, five minutes.

Mr. Mike Sullivan (York South—Weston, NDP): Thank you.

I think we're starting to grasp what Mr. Binns and Mr. Fuller have been saying about the FRA compliance regulations. As I understand it, the Canadian system, with a couple of exceptions—one being the O-Train and one being in northern Ontario, and by waiver only—regularly applies the FRA rules. We simply look at the U.S. and say whatever is good for them is good for us, essentially.

What you're saying is that we should be aggressively looking at European-style standards in order to permit off-the-shelf vehicles, because there is no manufacturer in North America that's building FRA-compliant DMUs or FRA-compliant EMUs in any large way. Bombardier certainly isn't.

● (1210)

Mr. Paul Larouche: We produce thousands of FRA-compliant EMUs—

Mr. Mike Sullivan: EMUs, right, but we don't have an electrified rail system, so they're not useful here in Canada.

Mr. Paul Larouche: —but DMUs, no.

Mr. Mike Sullivan: DMU is where several of the rail systems are going, but they're not able to purchase Canadian-made.

Mr. Fuller and Mr. Binns, there are two essential things that have to happen. One is PTC, which you didn't spell out, but it's positive train control. This means that it's not reliant on somebody seeing a light through the fog before they stop a train. It's actually electronics that are transmitted to the train to say, hey, slow down. Perhaps this would have stopped the tragic accident in the Niagara region last spring. But positive train control plus some form of temporal separation...and temporal separation requirements require the cooperation of the freight railways. We don't have a whole lot of cooperation from the freight railways. I don't know if you've heard about what's going on in Montreal. Montreal wants to electrify their rail lines and the freight railroads are saying, “No, we're not going to let you. We don't like electric wires over our trains.”

Could you comment about those two aspects, Mr. Fuller and Mr. Binns? What is it that we should be aggressively doing to move us in those directions?

Mr. Garry Fuller: George.

Mr. George Binns: I can understand the resistance to electrification, primarily in a country that really hasn't had it in its history. I can tell you about our experience in North America. We operate freight trains up and down the northeast corridor every single day. There's nothing inherently that conflicts with freight movements when having overhead wires—other than a corporate desire to cooperate. I'll leave it at that.

Mr. Mike Sullivan: CN and CP aren't interested in cooperating, but maybe this is a place where the federal government ought to be looking at pushing, aggressively leaning on these big freight railroads to be cooperative when it comes to passenger rail. That's one of the problems with passenger rail in this country; we don't have that cooperation.

I also heard someone talk about local content requirements in other countries. We don't really have any local content requirements in Canada for passenger rail manufacture. I know we do sole source our subway trains out of Bombardier in Toronto, but that's not a result of local content requirements. It's one of the places where the free trade systems aren't working for Canada. The U.S. has local content requirements, so companies like EMD move to Illinois because they know they have to be able to manufacture there. We don't have such a requirement here in Canada, so it's a disadvantage to the Canadian worker and to the Canadian economy.

Could you comment, some of the Bombardier folks, on what we should be doing in our free trade agreements to make sure there's a level playing field?

Mr. Pierre Seïn Pyun: From our perspective, in public policy terms, I think you're absolutely right, it's a matter of leveling the playing field. It has become increasingly difficult for Bombardier, from our operations in Canada, to be able to export to other markets, particularly in the U.S., where there are local content requirements or the buy American provisions.

In Canada the local content requirements do exist in two provinces: Ontario and Quebec. I believe in Ontario the threshold is a 25% local content requirement for a number of areas, including rail transit projects. In Quebec it's a 50% local content requirement for, again, a number of areas, including rail transit projects.

I've already alluded to free trade agreements being very helpful for Bombardier, a very export-oriented company. It's not only export. We're also investing considerably in international markets. Free trade agreements can also help on that front.

With respect to government procurement, certainly we would want a balanced outcome from the agreements, not to give up our capacity to develop technologies and manufacture here in Canada, bearing in mind the environment I just described.

● (1215)

The Chair: Thank you. I'll have to end it there.

Mr. Holder, five minutes.

Mr. Ed Holder (London West, CPC): Thank you, Chair.

I'd like to thank our guests for coming in today. I found this very insightful. We have two different discussions, in a sense. We have the cars and the whole issue of electricity. We have rails, and I guess electricity is potentially the common talking point here.

Mr. Wolf, I'd like to ask you a little bit about what you've indicated with respect to electric vehicles. I heard you mention that hybrids represent some 2% to 3% of the market worldwide. Is it strictly in Israel that you have a strong market share? I thought there might be more than one country.

Could you give us some idea of your market penetration?

Mr. Jason Wolf: We have markets up and running country-wide in Israel and Denmark, and smaller-scale demonstrations and beginnings of operations in the Netherlands, China, Australia, California, and Hawaii. The first two markets that went live—as I said, it's a network approach—are Israel and Denmark. You can go to a dealership today and buy an electric car that is cheaper than a gasoline car, and your monthly payment for the kilometres is cheaper than what you would have paid for gasoline. Those are the countries we are operating in right now.

Mr. Ed Holder: Who is producing those cars now? Who is manufacturing them?

Mr. Jason Wolf: Our partnership is with Renault. Renault is a French partner of the Renault-Nissan Alliance. They have a facility in Turkey that can produce up to 100,000 of these switchable batteries. They are called Renault Fluence Z.E., that is, zero emissions.

Mr. Ed Holder: It's interesting. You have made the comment that they can be manufactured cheaper. I am looking at some information from a previous witness. Magna indicated that it was about $12,000 to $15,000 more expensive for the electric capacity. Can you comment on that? How can they be that wrong?

Mr. Jason Wolf: It's not that wrong. If you include the battery, you get to exactly that number. You take a $30,000 to $35,000 car, and $12,000 is battery. But take that out, and you are talking about a $22,000 car. Then you get almost to parity, depending on which types of accessories you have with gasoline cars. We are currently selling in two markets around the world. This is not with any kind of external help. We are selling cars that cost less than the equivalent gasoline vehicle. It's not Better Place; it is Renault that is selling these cars at that price.

Mr. Ed Holder: Would they do that without subsidy, presumably? Is that what you are saying?

Mr. Jason Wolf: There is a subsidy from the governments in Europe and Israel. That's why I am talking about the difference in policies. In the U.S., you have a $7,500 battery subsidy. In Ontario, there's a limited $8,000 battery subsidy. In Israel and Denmark, there is not a battery subsidy, but there is a difference in the taxation on gasoline cars versus electric cars. There isn't a specific rebate or tax credit like there is in North America, but there is a taxation difference based on the carbon intensity of the vehicle. It's not specific to our type of car or any other type of car. It's just a lower percentage of tax on the vehicles that are zero-emissions.

Mr. Ed Holder: To be clear—and I apologize to our other guests, because I'm trying to understand this here—you are saying that the cost of a vehicle in Israel from Renault, and let's say the dollar exchange is comparable, is the same price as a car here in Ontario, and the only difference is the battery price? Is that what you are saying? Or would the battery price be included and make it comparable in price?

Mr. Jason Wolf: If the battery price is included, it's $10,000 to $12,000 more than the same car without a battery. But because Better Place owns the batteries part of the network, it can break it down into 100,000 miles, and basically charge you 6¢ to 7¢ per mile for the use of the battery, 3¢ for the electricity, and 3¢ for our operating the network and giving you the customer service. That brings it to 12¢ a mile, which is cost equivalent or cheaper than a $3.50 gallon or a $1 litre.

● (1220)

The Chair: Okay, thank you very much. Your time has expired, Mr. Holder.

Mr. Aubin.

[*Translation*]

Mr. Robert Aubin (Trois-Rivières, NDP): Thank you, Mr. Chair.

Good afternoon, gentlemen. Thank you for joining us. My only regret this morning is that there are so many of you and I only have five minutes.

My first observation has to do with the fact that Canada has fallen behind in the development of passenger transit, in particular. I am not going to ask you to comment on that, but I have come to the conclusion that strong political leadership could be a considerable change. In addition, it seems that we have all the resources we need.

When I was in my third year of high school, at the age of 14 or 15, my geography teacher talked about the possibility of a high-speed train between Quebec City and Windsor. As a teacher, 15 years later, I also talked about it. Now that I am an MP, 25 or 35 years later, there is still no high-speed train allowing me to travel between Trois-Rivières and Ottawa. It is not expected in the short term and it might not even happen during my career.

Can we soon foresee a high-speed train technology that would enable us to use the existing rights-of-way in the Quebec-Windsor corridor, without having to spend huge amounts of money? So without spending the amounts required for high-speed rail technology, for instance, can we still have an effective and profitable technology?

Mr. Paul Larouche: I don't remember if I had the time to get to the part about incremental speed technology. Yes, we now have the technology that uses existing infrastructures, but we have to limit the speed to 200 km/h, which is not insignificant. With those speeds and with a well-coordinated system where passenger trains have priority and service would be frequent, I feel that we could see a system in that corridor. We could set it up very quickly and it would give us something to be proud of.

Mr. Robert Aubin: The cruising speed of a train would be 200 km/h. For the Trois-Rivières-Montreal route, which is quite frequent, it would mean that it could be done in half an hour or 40 minutes. What distance does the train have to travel before it reaches its full cruising speed and before it has to slow down for the next stop? In other words, how many stops can we have in that corridor and still be able to talk about a high-speed train?

Mr. Paul Larouche: You have hit the nail on the head. The more stops there are, the more time the train needs to slow down and accelerate, and the longer the trip will take. We have to minimize the number of stops if we want to minimize travel time.

When Bombardier and its partners prepared the proposal for a high-speed train from Quebec City, the train was to stop at L'Ancienne-Lorette to pick up commuter passengers. Then it stopped at Trois-Rivières and, finally, it stopped outside Montreal. It didn't stop more frequently in order to minimize travel time.

Mr. Robert Aubin: Thank you.

Mr. Pierre Seïn Pyun: I would just like to add two short comments.

Bombardier has the technology for high-speed trains. China has a project where trains will reach up to 360 km/h. Italy has a similar project where trains will reach that same speed. In Canada, as my colleague said, there is room to optimize the existing infrastructure and increase the speed, but without reaching 350 km/h, because that would require a separate network. To my colleague's comments, I would add that we have to think about the signalling and electrification systems to improve the existing network.

Mr. Robert Aubin: Thank you.

Mr. Couture, in just under a minute…

[*English*]

The Chair: You have 30 seconds.

[*Translation*]

Mr. Robert Aubin: … could you tell us where we are at with the wheel motor? Mr. Couture had set it up, then he disappeared to the benefit of a 3M company, which, in turn, also disappeared. The wheel motor came back, but without any concrete application. Where is that system at?

● (1225)

Mr. Etienne Couture: Yes, Pierre Couture, the researcher who developed the model—and we are not related—now works for TM4. It is still the property of Hydro-Québec, TM4 being a subsidiary. Work is still being done to develop new applications. Meanwhile, the wheel motor with the monorail that I mentioned today is still an option.

Mr. Robert Aubin: How much time do we need to develop that project, which, if I am not mistaken, is more of an idea than a project? Who provides the funds?

[*English*]

The Chair: Mr. Aubin, your time is up.

Mr. Watson, for five minutes.

Mr. Jeff Watson (Essex, CPC): Thank you, Mr. Chair.

I wish I had longer than five minutes because I have a lot of questions. It will be hard to pursue a line of questioning here. I'll do the best I can. I'll try to be succinct, and I hope we can all do the same.

I have just a comment first. I'm going to focus on research and development and whether we have the right model in Canada.

We are reaching the end of a study now, and this panel, similar to previous panels, talks about government mandates, government-funded demonstrations of technology, government procurement. I think some of these issues strike to the larger issue, which is the size of our country and the adoption of technology, the economies of scale, if you will, for commercialization and the uptake of technology among consumers. There is a gap between the consumer's aspiration and the consumer's ability to pay, and somewhere in there I think we're asking government to step in and fill the gap.

I want to talk about research and development and the model we have. Let me first just ask a question, because I want to talk with Bombardier.

You probably engage in a lot of research and development. Just to give me a sense of where you are at on the R and D scale, what are your most recent Canadian revenue figures, and how much of that do you invest in research and development?

Mr. Pierre Seïn Pyun: Well, I mentioned a figure that we can release. It's the $2.7 billion investment in our Canadian operations in the last five years. But I'm not counting this year, 2012; I'm counting from 2007 to 2011, so—

Mr. Jeff Watson: That's how much you spend on R and D?

Mr. Pierre Seïn Pyun: That includes R and D, but that also includes investment in tangible and intangible assets in Canada.

Mr. Jeff Watson: I'm just trying to get a sense of a percentage of how much you are investing in research and development relative to what you.... Is that 2%, 10%?

Mr. Pierre Seïn Pyun: There is something I can share with you. In the last three years, just on R and D, $1.6 billion of investment has been made, but that's not only in Canada, that's across the board for Bombardier, rail and aerospace combined. That's the extent to which I can share the figures.

Mr. Jeff Watson: Just in a general sense, were you investing a lot in in-house capability, or do you use a lot of university-based research?

Let me come at this in a different way. What government programs do you use for research and development? Have you used IRAP? Have you used...? Can you give me a sense of what you've accessed in terms of your public capability versus your private capability?

Mr. Pierre Seïn Pyun: We do both. We have partnerships in place with a number of universities here in Canada, if you talk about—

Mr. Jeff Watson: What's the ratio of your private versus public?

Mr. Pierre Seïn Pyun: It depends on the type of research. Maybe Paul can add to that. When we're working on a product like an aircraft, for instance, a lot of the design engineering work would be done in-house, with the support of suppliers, because in the aerospace sector we're moving towards a risk-sharing partnership model, where our key suppliers also take on some of the design responsibilities.

Mr. Jeff Watson: It's similar in the auto industry.

Mr. Pierre Seïn Pyun: Yes.

In terms of collaboration with universities, the research and development programs could be at different stages. Maybe in some cases we're doing research less close to commercialization, but for a company like Bombardier it's always with a view to commercializing those technologies.

In terms of support or collaboration with the government, I think there needs to be a balance between a more demand-pull approach, like using government procurement as a policy tool—

● (1230)

Mr. Jeff Watson: Are you familiar with Fraunhofer as a model in Germany, for example?

Mr. Pierre Seïn Pyun: To some extent, yes.

Mr. Jeff Watson: It's a little more entrepreneurial, would be my assessment of it in a quick read. Is that a model that would be more favourable to what you aspire to do with respect to research and development, for example, than say the granting council, university, research push model of R and D?

Mr. Pierre Seïn Pyun: I think the flip side of the coin is the technology push approach as well, so programs to support, particularly, demonstration projects. I think there's a funding gap here in Canada for that segment of the innovation spectrum. Our view is there needs to be a balance between the two, and certainly there's scope in Canada to use government procurement more as a tool to achieve some innovation objectives.

Coming back to your comment about the size of the Canadian market, I think part of the equation has to be the export markets as well. When we export or when we do business in foreign countries... if you don't have reference projects here in Canada, it's very difficult for any Canadian firm to be able to compete. We develop technologies here in Canada, yes, for the Canadian market, but I think we have to bear in mind that there are export opportunities for a country like Canada that relies on trade.

The Chair: Thank you very much.

Mr. Aubin, go ahead.

Mr. Robert Aubin: Mr. Chair, I will be sharing my time with Denis.

[*Translation*]

I would like to ask a question so that we have time to go over the issue.

Let us go back to the wheel motor project. What type of funding do we need to move ahead with the research? How long do you think it would take for it to become available? Who pays the bill and how do we connect with the other provinces?

We really are actually thinking of a national public transit strategy.

Mr. Etienne Couture: A pilot project should be developed. As our colleague from Bombardier said, demonstration projects that become exportable are part of the most significant showcases. That has to be harmonized nationally. This goes back to the comment from the beginning: a Canada-wide strategy would pull it all together; if we follow local or provincial initiatives, we lose the opportunity to show Canadian leadership.

Mr. Robert Aubin: Do you have any idea of what kind of budget we would need for this to become reality?

Mr. Etienne Couture: No, I don't have any figures off the top of my head.

[*English*]

Mr. Mike Sullivan: Ultimately, it's electricity that's the saviour to a lot of this. We're not going to get high-speed rail without electric trains. We're not going to get a reduction in greenhouse gases without electric trains. We're not going to get a reduction in pollutants in urban centres if we're running diesel trains. That's part of why there's a group in Toronto called the Clean Train Coalition, which has been pushing the provincial government very hard to move to electric-based rail systems for its regional rail in the city of Toronto. So far it's extremely difficult in Canada to move that yardstick.

What is it going to take to actually create the infrastructure, to build that infrastructure? The freight railroads don't really want to. They're happy with diesel. They're just going to keep charging more and more. The City of Montreal wants an almost entirely electric transportation system within 10 years. They have the right vision. What are we going to need to do federally to make it happen more universally across the country?

[*Translation*]

Mr. Etienne Couture: I would like to answer that question.

First, electrification is inevitable; it is going to happen. The three major car manufacturers in North America are heading that way. Here in front of us, we have Bombardier, which is already ready for electric-engine vehicles. So it is an inevitable trend.

The question is whether we are going to end up at the back of the pack or whether we are going to be the leaders. What direction will Canada take in this area? The leadership has to be expressed and identified. Canadian regulations and initiatives have to demonstrate that willingness.

Let's take the Champlain bridge in Montreal for example, which is now being renovated. If they don't make room for electric public transit, they will miss the opportunity and they will have to redo it. Today we have to use the projects before us to turn into potential exports.

● (1235)

[*English*]

Mr. Mike Sullivan: It's that forward-looking leadership that your organization hopes to bring towards us, so that we can listen to you and bring that.... You talked about the Champlain Bridge. The Bloor Street Viaduct in Toronto is a great example of forward-looking politicians, who, in the 1920s, built a bridge with a subway track underneath it. The subway wasn't built until the 1950s, but the bridge was there. They knew exactly what was going to be necessary. I guess that's what you're saying. In everything we do as a federal government, in everything we do, whether it's procurement at a local, provincial, or federal level, or whether it's procurement using federal dollars, provincial dollars, or municipal dollars, we have to be generating this nexus of innovation in Canada using Canada as the leader of the world rather than the back end of the world.

I'm glad to hear you.

What obstacles are there? Can you think of any one thing that we should just remove and we're on the way?

I know it's hard.

[*Translation*]

Mr. Etienne Couture: We particularly want to demonstrate this willingness, this leadership. It is not as if there were roadblocks in the way, preventing things from moving forward. When we take the lead, and demonstrate our clear desire to act, investments and the private sector will follow. It is as simple as that.

[*English*]

The Chair: Thank you very much.

Mr. Poilievre, for five minutes.

Mr. Pierre Poilievre: I'd like to ask a question to our guest from Better Place. How much public funding has gone into the electrification initiative of which you are part?

Mr. Jason Wolf: The answer is, to Better Place, nothing. When I say "nothing"...we've raised $750 million from private equity investments. We got $50 million from the European Investment Bank as a loan. For my operation in North America we did get a few federal and local grants to build pilots, but in the commercial networks that we've launched, out of that $800 million there's been no public money.

Mr. Pierre Poilievre: Your company is instrumental in this Israeli effort to electrify the retail vehicles in that country. Is that right?

Mr. Jason Wolf: Yes, absolutely.

Mr. Pierre Poilievre: How much public funding has that initiative received?

Mr. Jason Wolf: Zero.

Mr. Pierre Poilievre: Zero? So the entire fleet of retail vehicles that Israelis are driving that are electric and battery-powered are entirely from private funds.

Mr. Jason Wolf: They're 100% from private funds.

Mr. Pierre Poilievre: Have there been any tax incentives or tax credits or preferences that have made it more affordable?

Mr. Jason Wolf: Yes, there is a general tax preference based on the carbon intensity. Based on your miles per litre, there's a different tax duty on vehicles, going from 10%—or for electric, 0%—all the way to 70% or 80% for the dirtiest diesel vehicles.

Mr. Pierre Poilievre: Okay.

What percentage of Israeli vehicles is now electric?

Mr. Jason Wolf: It's only this year that the network opened, so it's still a fairly small number. There are somewhere close to 1,000 being driven right now. But when you look at it from a percentage penetration standpoint, it's more than ten times the level of the most advanced markets, such as the U.S., in terms of new vehicle sales percentage. In the U.S., we're at about 0.3% after two years. In Israel this one model is hitting more than 2% to 3% in the last few months.

Mr. Pierre Poilievre: Of new car sales, how many are electric these days?

Mr. Jason Wolf: If you look at Israel, you're talking about 50 to 150 in a given month. But Israel itself has fewer than half the number of cars in the greater Toronto area, for instance.

● (1240)

Mr. Pierre Poilievre: I understand. But what percentage of new car sales in Israel are of electric vehicles? Do you know?

Mr. Jason Wolf: It's over 1%.

Mr. Pierre Poilievre: Okay.

Who owns the network of battery exchange stations?

Mr. Jason Wolf: The entire network is privately owned by Better Place. We have 38 battery substations across the country and thousands of level 2 charging stations at people's houses and in the public domain.

Mr. Pierre Poilievre: And do you install the residential ones as well?

Mr. Jason Wolf: Yes.

Mr. Pierre Poilievre: Are you turning a profit on your operation in Israel on this network?

Mr. Jason Wolf: It's a little early to turn a profit. As an infrastructure play, there was a heavy investment in the infrastructure.

If you look at each one of our miles or kilometres, we're selling at the equivalent of 15¢ or 14¢ a kilometre to consumers. We make a gross margin profit on each one of those kilometres.

We've driven over one million kilometres in the last month. Since we launched six months ago, it has gone from 100,000 to months of 200,000 or 300,000 to, last month, more than one million kilometres driven 100% on electricity. Of course, the numbers are still small, but once you have the network in place, the incremental investment is small and the number of kilometres being bought is very large.

Mr. Pierre Poilievre: That's terrific.

Do you have any advice on how your early-stage success could be replicated elsewhere, other than in Israel?

Mr. Jason Wolf: I look at California as a better example for Canada than Israel, because everybody says Israel is really a very small country.

People mention that the first thing is leadership. In California, the governor set out an executive order saying that he wants 1.5 million zero-emission vehicles—it doesn't matter whether they're from Better Place or whatever car manufacturer—by 2025. He wants the agencies to take a look at their procurement processes so that they can be the first, not the last, to buy.

He also said, let's look at the structural elements of an industry, because we know that the world is going to electrification.

The point the gentleman from Bombardier made is that California saw this as an opportunity to jump on locally renewable energy, local manufacturing. Some of the newest companies, such as Tesla and battery companies, are being established in California. A lot of it is due not only to incentives, but really to leadership that says that we in California are going to be the model for the world. It will probably take longer than Israel or Denmark, but it's a very good example to follow.

Mr. Pierre Poilievre: How much is a litre of gas in Israel?

Mr. Jason Wolf: It's $2.

Mr. Pierre Poilievre: Right. So you have a built-in, natural financial incentive to go to electrification that we don't have yet.

Mr. Jason Wolf: Absolutely. That's exactly why our investors would put that $750 million into countries in Europe. Canada falls quite down the line, and the U.S. is even lower.

The Chair: Thank you.

Mr. Holder, you have three minutes.

Mr. Ed Holder: Thank you.

I want to carry on with that a little bit. I was going to ask that question. Most of our questions have been about rail, but what do you think the price point of petrol has to be to provide the incentive to move to an electric system, Mr. Wolf?

Mr. Jason Wolf: That's a great question. This is how we calculate our business and how we make our financial decisions.

We can sell an equivalent of a litre at about 85¢ to 90¢; that's a three-and-a-half-dollar gallon. That's the point at which we know we can turn a profit. Of course, the fixed cost of putting in the infrastructure comes into play, so we're going to the markets that have the highest price per litre first.

Then there are other considerations, of size and other things that the U.S. and Canada have.

Mr. Ed Holder: But you do two things: you provide electric charging at someone's home, I heard you say, and you also do battery replacement.

When does the battery replacement come in? Do you go into some place like a Canadian Tire, if you know that store, and say, “I'll have a new battery, please”? Your company is the Canadian Tire equivalent, so do you own those batteries, or do you just swap them out and pop the next one in? Is that how it works?

Mr. Jason Wolf: Yes, but it's much more high-tech, and quicker than in the Canadian Tire example. Technically, we could partner with Canadian Tire and put these stations in those places. The key is that in less than five minutes, end to end, you have another 100 miles.

What happens is that you come in to your dealership, you buy your car, as you do a mobile phone, you sign up for the kilometres, and then someone comes to your house and puts in a charging station that fits in with your electrical grid, and that thing fills your car whenever you're sleeping or whenever you're parking.

On the exceptional trip—let's say you want to drive from Toronto to Ottawa—you would then switch your battery once or twice, depending on the length of your trip, and you'd be able to make any type of trip. Once you get to Parliament or to your local destination, you would probably have a regular charger that trickles electricity in a more efficient way.

So the switch is the one that allows the industry to...you couldn't do it without the switch, but it's not the only component. About 70% to 80% of the energy actually comes in at home or at places where the car rests.

● (1245)

Mr. Ed Holder: My final question, then, with my available time, would be this. I recall that not all that long ago, in southwestern Ontario the grid went down. It impacted southwestern Ontario, Michigan, and it actually was significant throughout Canada and the States. When that happens—and I acknowledge that it was pretty brutal for businesses—are you out of business, if the electric grid goes down?

Mr. Jason Wolf: No, because the switching stations have a reserve of batteries that are fully charged. These batteries will be dispensed. Of course, they will run out, just as in Florida when the hurricane came in: after a while you don't even have liquid fueling stations.

The benefit of this type of network approach is that working with Hydro Québec, or PowerStream or Veridian in Toronto—with those types of utilities—you can actually make the grid more stable, because of the buffering of renewable energy and the ability to store, not just balance, load, and generation.

Mr. Ed Holder: Thank you.

Thank you, Chair.

The Chair: Thank you very much.

Our time has run out, but I'd like to thank all of our witnesses who are here in person with us and the two who are with us by video conference. Thank you very much.

We'll see the committee on Thursday. We are adjourned.

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