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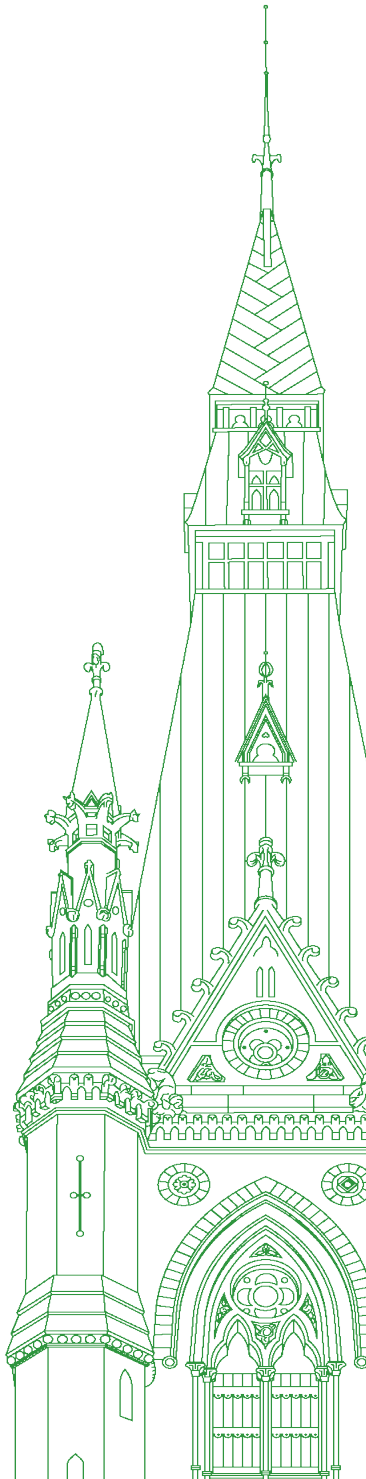

Chair: Mr. Francis Scarpaleggia

Standing Committee on Environment and Sustainable Development

Monday, November 23, 2020

● (1600)

[*Translation*]

The Chair (Mr. Francis Scarpaleggia (Lac-Saint-Louis, Lib.)): Welcome to the seventh meeting of the Standing Committee on Environment and Sustainable Development. This is the third meeting of our study on zero-emission vehicles. This is a hot topic right now. In addition to general trends towards cleaner energy, as we know, last week, the Quebec government made quite an important announcement on zero-emission vehicles.

This meeting is in a hybrid format. As you know, you can use the language of your choice. When you aren't speaking, please mute your microphone to avoid any miscommunication.

[*English*]

Today we have six witnesses. Each witness will get five minutes for opening statements and then we'll go right into the Q and A sessions.

We have with us Suzanne Goldberg, director of public policy from ChargePoint, and Maxime Charron, president of LeadingAhead Energy. From Siemans Canada Limited, we have Faisal Kazi, president and CEO, Rocco Delvecchio, vice-president of government affairs, and Theresa Cooke, head of strategy and e-mobility. We also have Cedric Smith, analyst at the Pembina Institute, Angelo DiCaro, director of research at Unifor, and Patrick Bateman, interim president of WaterPower Canada.

We'll go in the order that I just read out. That means we'll start with Ms. Goldberg for five minutes, please.

Ms. Suzanne Goldberg (Director of Public Policy, Canada, ChargePoint): Good afternoon, Mr. Chair, and members of the committee. Thank you for having me.

ChargePoint is one of the world's largest electric vehicle charging networks. ChargePoint provides a fully integrated EV charging solution that includes a portfolio of hardware, software and services that support consumer and fleet charging needs at home, work, around town and in depots.

ChargePoint has a significant and growing presence in Canada. We work with a network of over 40 partners to distribute, and we work with hundreds of companies to install and maintain our charging solutions across Canada. These partners range from electrical equipment providers like Graybar Canada and Sonepar Canada, to small and medium-sized businesses like Arntjen Clean Energy Solutions, Virtuoso Energy and Waleco. We work with these partners to sell solutions to businesses, municipalities, utilities and fleets from St. John's, Newfoundland, to Prince George, B.C.

Canada's EV charging footprint has grown significantly as sales have risen. Today there are over 12,000 places to charge, and likely more than double that amount in the homes of Canadians, workplaces and fleet depots. The growing footprint not only establishes a fuel distribution network that will deliver significant emission reductions in one of Canada's largest emitting sectors, but also represents investment and job growth. For example, the B.C. government reports that there are over 250 companies in the province's EV sector, contributing 6,000 full-time equivalent jobs and $600 million to the provincial GDP.

Canada's EV charging sector employs trade and skilled workers from across the country, including civil and electrical contractors, engineers, sales and distribution professionals, logistics personnel and utility employees. One of our channel partners in B.C. estimates that the average charging station installation requires between 188 and 372 job hours, and between five and 10 different job functions per installation, for level two and fast charging installations, respectively.

These numbers are also in line with data we've collected for other installations across North America. The potential for growth in this sector is significant, because of growth in the global market and Canada's target for 100% zero-emission vehicle sales by 2040. Domestically, this potential is partially dependent on federal policy action. On the vehicle side, this includes policies like ZEV standards, vehicle emissions regulations and vehicle incentives. On the charging side, this includes measures like infrastructure incentives, clean fuel standards, building codes and addressing regulatory barriers.

Canada has already made progress by offering funding mechanisms to match private capital and accelerate consumer and fleet charging. It has also made progress on the regulatory side with ongoing changes to Canada's electrical code, most recently with a provision to enable the use of energy management features that reduce the costs for charging station owners.

The next challenge we face as an industry is enabling energy-based fees for charging services. Currently, owners of charging stations must sell charging services by the minute, even though different EVs draw different amounts of electricity over the same period of time. For example, when charged per minute, a Chevrolet Bolt driver is billed the same amount as an Audi e-tron driver although the Audi draws 1.7 times more power over a 30-minute fast charging session.

Energy-based pricing provides more transparency to drivers and more transparent cost-recovery to station owners. Enabling energy-based pricing requires that the meters embedded in these charging stations be certified by Measurement Canada and that station owners be subject to obligations under our Electricity and Gas Inspection Act and regulations.

The act and regulations were not developed with EV charging stations in mind, and therefore, a unique approach is needed to ensure that we have timely enablement of energy-based pricing in a manner that reflects the reality of charging station operations, requirements in other jurisdictions and demand for pricing options. We hope the recently initiated Measurement Canada process achieves these objectives.

Thank you for the opportunity to appear before this committee. I look forward to your questions.

● (1605)

The Chair: Thank you very much.

We'll go now to Mr. Charron.

Mr. Maxime Charron (President, LeadingAhead Energy): Thank you, Mr. Chair, for inviting us today to share our industry knowledge with the committee for the zero-emission vehicle study.

LeadingAhead Energy is a Canadian company operating in the electric vehicle charging infrastructure industry across Canada and recently in the United States. We believe in providing innovative solutions disturbing the industry status quo by providing advisories on industry best practices and by supporting open network solutions offering flexibility, future-proofing and market competition.

As a result, we have worked on multiple level two and level three charging infrastructure projects, providing and consulting on turnkey solutions and assisting with the entire process from government grant applications and project management to supplying and installing the charging equipment.

As you are engaging with all industry stakeholders, from our experience the significant lack of education on EVs in general is clear, from range anxiety to the knowledge of existing charging infrastructure and the misunderstanding of the EV life cycle, all of which contribute to the spread of misinformation. Further, EVs still come with a higher price tag today. Unfortunately, lending companies do not factor in the savings of EVs for financing.

Time for charging is also a major concern before buying an EV. Several utility companies and other private investors have done incredible work to deploy DCFC chargers from coast to coast. We consider this stage one of deployment, since the vast majority are only at a 50-kilowatt charging speed and are equipped with only one or two units on site. With longer-range batteries, one to two hours of fast charging is now required on the 50 kilowatts, assuming there's no lineup.

We are now on the second wave of DCFC deployment, bringing high-power charging ranging from 100 kilowatts to 350 kilowatts, with the capability of charging multiple vehicles at the same time at a faster rate, thereby reducing charging times for long-range EVs.

LeadingAhead Energy has been working on many charging infrastructure projects using open charge point protocols, or OCPP. We believe this is essential to create market competition and industry innovation, avoid stranded assets and reduce costs. There is also something to be said about the importance of flexibility and future-proofing of the equipment that is using government funding in the growing market, adding industry players instead of potentially creating monopolies.

Contrary to some beliefs, OCPP is not an inferior protocol, as we have experienced 100% uptime in our latest project. Following Europe's lead a few years ago, OCPP 1.6-J has been added as a requirement in the latest CleanBC public charging rebate program, which is an important step towards interoperability between charging stations and network providers, an initiative that other government programs should follow.

The clean fuel standard, or CFS, is definitely one of the most important and unknown pieces of legislation to help achieve the goal of reducing Canadian carbon emissions. LeadingAhead, like many others in the industry, is very supportive of the new CFS format allowing the generation of carbon credits from EV charging stations.

It will be important to ensure that the credits are being returned to the investors in the projects, and not the network providers as is written in its current format. This would help to incentivize investors—mostly real estate managers and utilities—to reinvest the proceeds in the further expansion of charging infrastructure. By having network providers receiving these credits, we are running a high risk of further creating a market monopoly by shifting the buying power from the investors' hands into the network providers' hands, as network providers typically do not invest in EV charging infrastructure projects.

LeadingAhead Energy is grateful to have had the opportunity to share its market knowledge with the committee. The benefits of electrifying Canada's transportation will come not only from electric vehicles but from those in the industry as a whole who support the entire life cycle of an EV, from resource extraction to recycling, repurposing, engineering, consulting and so on. There are tremendous numbers of opportunities in the electrification of transportation, and government regulations as well as incentives will be a major player in determining the success of Canada on the national and international fronts.

Thank you very much for your time.

[*Translation*]

Thank you for your attention.

● (1610)

The Chair: Thank you, Mr. Charron.

Mr. Kazi, the floor is now yours.

[*English*]

Mr. Faisal Kazi (President and Chief Executive Officer, Siemens Canada Limited): Good afternoon.

First I would like to thank the chair and the committee members for the invitation to Siemens to testify on this very important topic.

My name is Faisal Kazi. I am the CEO of Siemens Canada. Today I have with me Mr. Rocco Delvecchio, the vice-president of government affairs, and Theresa Cooke, the vice-president of business development for Siemens Canada. Theresa is specifically responsible for developing our e-mobility business, so her participation is very relevant here.

For those who don't know, Siemens is one of the largest engineering and technology companies. We operate in more than 190 countries. We have been in Canada since 1912 providing solutions in almost all Canadian sectors in the fields of electrification, automation and digitalization. Our affiliates and Siemens employ around 5,000 people across Canada in more than 40 offices.

Canada has a very ambitious and challenging goal to be a net-zero economy by 2050. In this context, we must say that the greening or the decarbonization of the transportation system will play a very important role as the emissions from this sector are roughly one quarter of the total of Canadian greenhouse gas emissions. Thus, the move to zero-emissions vehicles is central to greening the transportation sector. We believe that hydrogen fuel vehicles may play a role in the long term, but the most viable short-term option comes from electrification.

To electrify the transportation sector effectively, we would need to take a complete system perspective and ensure that all required value-chain elements scale up together. In our briefing, we have outlined the value chain for delivering transportation, how it is impacted by electrification and the top challenges that need to be addressed in order to bring electrification of transportation to scale in Canada.

I'd like to take this opportunity to highlight a few of the elements that I feel are important. The first one is the charging infrastructure. The charging infrastructure and the electrical infrastructure behind the charging infrastructure must be a forethought and not an afterthought. We believe we must put in place a robust, efficient and intelligent charging infrastructure, both to ensure the reliability of the critical transportation systems but also to optimize the business cases. This is extremely important when it comes to large-scale fleet electrification like public transit or trucking fleets. We welcome the leadership of the Canada Infrastructure Bank for putting mechanisms in place to help finance this critical component.

The second element I'd like to raise is about making this infrastructure intelligent. We believe that charging infrastructure must be intelligent, which means it has to be connected to platforms that allow them to be optimized and integrated into the grid, what we call a smart grid. Dynamic optimization of charging will enable both fleet owners and electrical utilities to manage and distribute loads, charge in off-peak hours and lower the overall cost of electrification.

To maximize efficiency and reliability, charging depots must be optimized as connected grid energy assets. The depots can be electrified using microgrids that are powered by distributed renewable energy systems such as solar panels and batteries. Such an approach will not only reduce the overall costs in the system, but the depots can really act as resiliency blocks in the electric grid, which is becoming increasingly vulnerable as weather-related events like ice storms are increasing.

In order to have intelligent infrastructure, everything has to be connected. Like all connected systems, cybersecurity will play a very important role to ensure the integrity and the security of the operations but also to ensure that the transactions are also secured. This would be a key element to ensure that all these transactions, operational transactions and financial transactions, are secured.

● (1615)

The Chair: We have maybe another 15 or 20 seconds. We have passed the time, but we can extend it a bit.

Mr. Faisal Kazi: Sure.

The third element is around the strategy, what kind of strategy the government is planning to do. We believe there is a lot of potential here, especially with the amount of technology available, for example “charging as a service” or “vehicle to grid”, and in fact, innovation around the business models.

We must point out that Canada has an edge. We have vehicle manufacturers like New Flyer, Nova Bus, etc., and this gives us a unique opportunity to lead in this sector. We believe that a coordinated approach between the different federal ministries—Transport Canada, Infrastructure Canada and NRCan—can really help secure a leadership role.

The Chair: Thank you.

There will be time during questions and answers to delve into the ideas you presented a little bit more.

We'll go now to Mr. Smith, from the Pembina Institute.

Mr. Cedric Smith (Analyst, The Pembina Institute): Mr. Chair and committee members, thank you for the invitation to take part in your consultations on zero-emission vehicles.

My name is Cedric Smith. I am an analyst with The Pembina Institute, a clean-energy think tank with offices in Ontario, Alberta and British Columbia. The Pembina Institute leads the urban delivery solutions initiative, a national network of businesses and organizations working to modernize urban freight operations in Canadian cities.

Today I am here to talk to you about ZEVs and Canada's climate commitments. Under the Paris Agreement, Canada has committed to reducing GHG emissions by 30% below 2005 levels as of 2030. More recently, Canada has set a target of net zero by 2050. Only last week, Canada introduced Bill C-12, an act respecting transparency and accountability in Canada's efforts to achieve net-zero greenhouse gas emissions by the year 2050. Reducing emissions from transportation, which make up a quarter of Canada’s total emissions and have increased significantly over the past two decades, is necessary to meet these targets.

Pembina views an accelerated transition to ZEVs as key to Canada's decarbonizing its transportation sector. Recent analysis by the International Energy Agency indicates that achieving net-zero greenhouse gas emissions as of 2050 would require that over 50% of passenger cars sold be electric as of 2030. Canada has set a non-binding target of ZEVs making up 10% of new light-duty vehicles sold as of 2025, 30% as of 2030 and 100% as of 2040. Without further action, Canada is unlikely to meet those targets. Currently, ZEVs make up only about 3% of the market.

There are three major barriers to further ZEV adoption in Canada: high upfront purchase prices, insufficient charging and refuelling infrastructure, and insufficient supply. Targeted policy action can help alleviate these barriers.

First is purchase incentives. ZEVs have higher upfront purchase prices than traditional internal combustion engine vehicles. Estimates by the ICCT, for example, indicate that the differential is $10,000 for short-range cars and $27,000 for long-range SUVs.

Canada's iZEV program provides point-of-sale incentives for the purchase or lease of zero-emission vehicles, with a maximum incentive of $5,000. The program has been allocated $300 million for three years, beginning in 2019-20. Uptake in year one of the program suggests that iZEV could run out of money in year two without additional funding. iZEV should be topped up by $150 million in the next federal budget.

Second is funding for charging and refuelling infrastructure. “Range anxiety” refers to a fear of owners of internal combustion engine vehicles that ZEVs will run out of power on a trip. Such fear is often noted as a barrier to ZEV ownership. It is also important that ZEV adopters be able to charge their vehicles at home. The majority of early adopters have home access to charging infrastructure.

Unfortunately, Canada’s public ZEV-charging network remains limited with under 4,500 charging stations, comparing unfavourably with over 12,000 gasoline stations. In addition, about one-third of Canadians live in multi-unit residential buildings, such as apartment buildings or “garage orphans”—dwellings with no access to garages or driveways—and face unique difficulties with home charging.

Canada’s zero-emission vehicle infrastructure program, ZEVIP, has been funded with $130 million over five years, beginning in 2019, to fund the deployment of electric vehicle infrastructure in public settings, including on-street and parking areas, as well as for multi-unit residential buildings. To scale up the program and increase the funding contribution, ZEVIP should be topped up by $300 million in the next federal budget.

Third is adoption of a zero-emission vehicle standard. Canada has an issue with electric vehicle supply. According to recent research, only one in three dealers in Canada has at least one plug-in electric vehicle in stock. This figure decreases to less than one in five for dealers outside of Ontario, British Columbia and Quebec.

The implementation of a light-duty zero-emission vehicle standard would help increase supply in Canada. Such a standard would require that an increasing portion of auto manufacturer vehicle sales be zero-emission. Quebec, which has a mandate in place, makes up about 57% of Canada's plug-in electric vehicle inventory. Since the adoption of Quebec's ZEV act in 2016, the percentage of ZEV models available in California that are also available in Quebec increased from 66% to 92%.

● (1620)

It should be noted that, in addition to greenhouse gas reduction benefits, increased ZEV sales will also create economic benefits for Canada as manufacturers benefit from an expanded domestic market. Globally, the majority of electric vehicles—80%—are produced in the same region they are sold.

Canada has, in the past, lagged behind in the transition to an electrified transportation future. In 2018, for example, the electric share of Canada's vehicle production was 80% lower than the global average. Recently, however, there had been announcements of auto-manufacturing investments in EV manufacturing, including $1.8 billion to retool the Ford Oakville Assembly Complex to produce battery electric vehicles. Expanded Canadian ZEV markets will only accelerate this positive momentum.

Targeted policy, including purchase incentives and funding for charging and refuelling infrastructure and a zero-emission vehicle standard, can help increase zero-emission vehicle sales and help Canada to meet its climate targets. In doing so, economic benefit will be derived for Canadians as well. Thank you.

● (1625)

The Chair: Thank you, Mr. Smith.

Now we go to Mr. DiCaro.

Mr. Angelo DiCaro (Director of Research, Unifor): Thank you very much.

Good afternoon, Chair and members of the committee. It's a pleasure to have been invited to speak with you today and to be presenting alongside my distinguished panellists.

I am Angelo DiCaro, the national director of research for Unifor. We are Canada's largest labour union in the private sector. We represent about 315,000 members across nearly all major sectors of the economy from coast to coast. Our union is also the predominant voice for workers in the Canadian auto sector, with more than 40,000 members involved in vehicle and powertrain assembly, component parts manufacturing and also working in auto dealerships.

The past months have placed a spotlight on the Canadian auto assembly sector, there is no doubt. Coming out of contract talks with the Detroit three, our union helped secure two groundbreaking investments in EVs, the first of their kind in Canada.

The first, at Ford, involves the complete transition of our assembly complex in Oakville, Ontario. In 2025 that plant will transition to become the first all-electric, mass-production vehicle assembly facility in Canadian history. It's a signal that Canada, as an automaking nation, is still in the game.

That announcement was followed by our deal at FCA, via Chrysler, where the company committed to introducing a new multi-energy vehicle platform to the Windsor assembly plant. Once that's complete in 2024, this new global platform will have the capacity to assemble cars, trucks and utility vehicles powered by both battery electric and plug-in hybrid powertrains, which is unlike any platform currently in North America.

Underlying these investments is a strong collective agreement that raises wages, improves working conditions and even advances the union's goals on matters of racial justice in the workplace.

As great as all this is, this was last month's storyline. What matters now is what happens next. One of our union's longest-standing grievances is that Canada has lacked a coherent auto sector development strategy. This directionless approach to industry building has failed. As you all know, demand for zero-emission vehicles, while currently a small fraction of the market, is on the rise. Analysts expect light-duty sales of EVs will make up nearly 60% of new car sales globally by 2040. New EV assembly capacity will help Canada meet some of this demand, and that's good, but simply not enough.

Our ambition can't be just to play a role. Our ambition must to be to lead. Without a coordinated national strategy that encourages both consumer adoption and scaled-up domestic production across the supply chain—we can certainly find ways to get Canadians into zero-emission cars—we'll just risk losing the associated economic benefit as production moves elsewhere.

An effective strategy has to synchronize vehicle sales incentives with demand-side infrastructure programs, including charging stations and incentives to expand the consumer market. It must also involve careful supply chain mapping to identify gaps and localize investment targets. It must include content rules for fleet purchases and vehicle afterlife requirements, linking disassembly and recycling to job creation.

All of these efforts have to synchronize with progressive trade policy to meet Canada's sustainability goals, including measures that disincentivize imports of GHG-intensive products and that attach strict environmental and labour conditions on goods entering the Canadian market.

What I have outlined here is just some starting-point suggestions. These strategy discussions have to be much bigger. However we approach this, governments have to understand they have a role to play.

Contributions confirmed by both the federal and provincial governments to new Ford, FCA and also GM investments are a positive step. That's the price of coffee in a world where lucrative investments like this are in short supply. The spillover effects on job creation and economic activity are almost incalculable. Two months ago, Canada was playing on the margins in this EV race. Now we are charging to the front of the line. Now is the time we have to pull together strategically to craft policy that locks in this momentum and builds for the future.

Thanks very much, and I look forward to your questions.

The Chair: Thank you, Mr. DiCaro.

We'll go now to Mr. Bateman.

[*Translation*]

Mr. Patrick Bateman (Interim President, WaterPower Canada): Good afternoon.

Thank you, Mr. Chair and committee members, and Mr. Roger, the clerk of the committee, for inviting WaterPower Canada to appear as a witness for this study on zero-emission vehicles.

I also want to thank you for your dedication and perseverance in supporting the well-being of your constituents during this pandemic.

● (1630)

[*English*]

WaterPower Canada is the national trade association that represents the producers of hydroelectricity and their suppliers of goods and services.

Despite the tremendous challenges that the COVID-19 pandemic has presented, the water power sector has overseen the reliable operation of the more than five hundred generation stations across Canada. We are proud to be supporting Canada's pandemic response by powering our hospitals, communication networks and supply chains.

Canada is a global water power leader. Our sector has powered our economy for more than one hundred years. Water power is central to our energy security, producing 60% of our total electricity. That makes our grid one of the cleanest in the world.

Today, our sector also represents 90% of Canada's total renewable electricity supply and almost 60% of Canada's gross domestic product from renewable and alternative energy supply. Canada is in the top 10 countries worldwide for the number of water power jobs. More than half of all the renewable energy jobs in Canada are in the water power sector.

With regard to this study, the previous witnesses both today and in previous weeks raised many topics that our sector supports. Firstly, Canada is one of the few countries in the world uniquely positioned to move toward and beyond a 90% non-emitting electricity supply. Leveraging this clean electricity advantage to power zero-emissions vehicles will bring significant environmental, economic, public health and consumer benefits.

Secondly, the federal government has an integral role to play in supporting the development of the national ZEV market and supply chain, including with a suite of available policy options that will provide the best outcomes when introduced in complementarity.

Thirdly, we are already building momentum. The electricity sector is making investments in anticipation of demand due to electrification. Automakers are building ZEVs and components in Canada. The opportunities go far beyond cars and chargers to metals and minerals. Charging technology companies are growing, creating intellectual property and building a new industry in Canada.

This demand growth from the electrification of transportation, combined with stringent and stable long-term climate policy, is critical for my sector to maximize our investments in the coming years. These potential investments represent tens of billions of dollars, tens of thousands of new jobs and the avoidance of hundreds of millions of tonnes of greenhouse gas emissions annually.

Investments made by our sector in the refurbishment and redevelopment of our existing water power generation fleet provides additional electricity generation and storage capacity at a very low unit cost and with a minimal incremental environmental footprint.

Investments to improve flexibility in these units and sites, and in new transmission infrastructure, pumped-storage hydro and green hydrogen projects, can further facilitate the reliable integration of variable renewable energy resources, such as wind and solar. This will be especially important in regions where coal is being phased out. Water stored in our reservoirs can be the battery that balances supply and demand.

Greenhouse gas emissions need to decline rapidly in order for us to exceed our 2030 Paris Agreement goals and achieve net zero by 2050. Building on our strengths, leveraging existing competitive advantages and creating the right conditions for investment will support these objectives.

Canada's clean electricity advantage and the electrification of zero-emissions vehicles can, and must, be a central component of our climate action and economic recovery.

Thank you again for the opportunity to appear. I look forward to addressing any questions that the committee may have.

[*Translation*]

Thank you for your attention.

The Chair: Thank you, Mr. Bateman. That was very informative. We have a lot of work to do.

We'll now proceed to the question and answer period to learn more about the topic.

We'll start with a six-minute round of questions.

Mr. Albas, the floor is yours.

[*English*]

Mr. Dan Albas (Central Okanagan—Similkameen—Nicola, CPC): Thank you very much, Mr. Chair.

I certainly want to thank all of our witnesses for giving part of their time and expertise to our committee today. This has been a very interesting study thus far, and I appreciate your efforts.

I want to start with Unifor and Mr. DiCaro. Thank you for the work you do in making sure that Canadians are working. I'd like to ask you a question in regard to the comment you made that there needs to be more thought put into a strategic vision for the car industry in Canada. Could you elaborate a little bit more on that?

● (1635)

Mr. Angelo DiCaro: I would say that we can encapsulate our approach to industry building in the auto sector, probably since the late 1990s, when the former 1965 Auto Pact was dismantled. That was an interesting trade agreement we had. It was the only trade agreement of its kind that actually mandated investments coming into Canada. If there were transformations, changes and technological developments in the industry, we would naturally be on the cusp of that. Because we live right beside the U.S., that's the market we mostly sell to, so whether we liked it or not, we would have auto investment coming in.

This is not the case today. It's seems that we've been more inclined to sit back and try to engage in a much more laissez-faire approach to how the auto industry was going to evolve. We've seen that not work out too well. We've seen us go from the fifth-largest automaker in the world to now somewhere around 12th. We've seen production decline by 40%, and we've seen jobs decimated across communities.

In place of a structure like the Auto Pact, we need to contemplate other policy ideas that go beyond just having a bucket of money at the ready. It's very important to be playing a role, but it needs more. In some of the cases I have listed, we can go through a whole series of policy ideas about how we can be more engaged—as a government, interconnected with provincial governments, and so forth.

Mr. Dan Albas: Many in our caucus, particularly Colin Carrie, among others, have really impressed upon members of Parliament like me.... I'm from British Columbia, and in some cases people will ask me, “Why is it in Ottawa that they're only talking about cars and steel and aluminum? Why aren't they talking about forestry?”

I say that it is important for all of these things, but there's one area I would like your feedback on. You talked about not just having money where we're sitting back, that we should be looking at where the opportunities are in research and development and where we figure in it. Making sure we have clean and cheap electricity could be a competitive advantage. We've lost that tremendously in Ontario, I understand. Also, in my area, I have two copper mines. When I go and talk to the people who work at the mines, they say they'd like to see more emphasis put on their products in electric vehicles, because there's twice as much copper in an electric vehicle than there is in just a regular car.

Would this involve talking about not just how we can benefit at your end in terms of that value add, but also how we can go soup to nuts, building off of our resource sector, which has put a lot of food on tables in my neck of the woods, in addition to working with you for that next part of the value chain?

Mr. Angelo DiCaro: Absolutely. I really couldn't agree more. The strategic position we're in, just to build on the comments I started with, is quite remarkable. As other panellists have talked about, we're rich in emissions-free energy, and at the same time we're rich in the resources that are in high demand for these products. We have a well-established industry, with skills, with networks and with infrastructure for building the cars.

Take groups like the APMA. I'm not sure if they have presented to this committee yet, but they are running a project called “Arrow”. It showcases the ingenuity of Canadian parts suppliers to build a prototype electric vehicle strictly with Canadian suppliers. We have everything we need here. It's a matter of putting those pieces together strategically. I think that's something our union is looking at.

I have not seen any push-back on that from any government officials I've spoken to, so that's a good thing. It also seems like even members across the aisle share that same view. I think it's time we really get down to it and figure out how to move this forward carefully.

Mr. Dan Albas: Thank you very much.

Mr. Bateman, obviously there is an abundance of hydroelectricity in my province, as there is in Quebec. There are some new projects that are either being built right now...whether it be to power Canadian clean LNG or, in terms of nuclear, small modular reactors, etc., as another choice. I know you're not going to want to speak about SMRs, but could you maybe speak about some of the opportunities for hydro development where you think they could be sustained or there could be some refurbishments to help build on the green electrical grid that we already have?

● (1640)

Mr. Patrick Bateman: First and foremost, our existing fleet is where significant opportunity lies. The average age of a hydro power generation station in Canada is more than 50 years, so many of them are now due for investments for life extension. During that time, there are opportunities to improve efficiency and performance at capacity, both for generation and storage. Those opportunities exist throughout Canada, and they're very considerable.

[*Translation*]

The Chair: Thank you.

We'll continue with Mr. Longfield, who will be sharing his time with Ms. O'Connell.

[*English*]

Mr. Lloyd Longfield (Guelph, Lib.): I'd like to continue on Mr. Albas's line of questioning with Mr. Bateman.

I've done a lot of work in hydroelectricity in Manitoba. Quebec and B.C., of course, are leaders. You mentioned the transition from coal. Saskatchewan and Alberta still have some plants that need to be phased-out over time.

If we go to zero-emission vehicles, don't have a clean grid and are transferring the generation of power from emitting sources, could you comment on how important it is to not just count the emissions at the tailpipe but also the emissions coming from power plants?

Mr. Patrick Bateman: Presently, the life-cycle emissions of an electric vehicle will be less than that of a gasoline vehicle anywhere in Canada, regardless of grid intensity. However, that being said, in provinces such as Manitoba, Quebec and B.C. that have been mentioned already, those emissions are significantly less, and in many cases will be negated within the first several months of driving.

Both Alberta and Saskatchewan are on a track to significantly decarbonize. Maximizing our GHG emissions will involve two things: number one, greening the grid driving out emissions; and number two, using that clean electricity to electrify transport but also buildings and industry.

Mr. Lloyd Longfield: I'd like go to Mr. Kazi from Siemens. We know the influence that Siemens has had over the engineering developments in grid structures and smart grids. Guelph has a pilot project where we have a smart grid with Alectra Utilities where you're able to sell power from your charger into the network using blockchain technology, but we don't have regulations around that yet.

Mr. Kazi, you mentioned the fleets, and the importance of converting fleets. We do have a policy in Canada around 100% write-down on fleets that are purchasing zero-emission vehicles, but you also mentioned buses. Again, Guelph has 65 electric buses coming online. We do need the smart grid behind that.

How does Germany compare in terms of the advancements that it has been able to make, and whether those have resulted in zero-emission vehicles being more prevalent in Germany?

Mr. Faisal Kazi: From the German perspective, the penetration of electric vehicles already started a couple of years ago. The one thing we learned there, which I also mentioned, was the infrastructure to charge these vehicles and the electric supply. Just to give you an idea, if on a given street, everybody had an electric car and charged it at the same time, the transformer would not be enough.

We want to make this charging infrastructure for buses intelligent. The answer is laying there. How can we optimize, and how can we ensure we are not charging at peak times, which is already a stress factor for the grid?

You mentioned vehicle-to-grid charging back into the system. What is required is the optimization of the overall system. We are running pilots in Germany where we are looking into these optimizations and how to do that. In fact, we are also piloting in Atlantic Canada together with Nova Scotia Power and New Brunswick Power. That is work that is still ahead of us, and we need regulatory reforms to make that happen. Without that, it would be challenging.

● (1645)

Mr. Lloyd Longfield: That's where I was going with that question on regulatory reforms. The pilots are pretty well confirmed now in the Maritime provinces. How do you scale out across Canada? You need regulations, and you need provincial and federal investment.

Mr. Faisal Kazi: We need a regulatory change, for example, in the way that all the transactions are happening. For example, today the utilities are paid or the revenue model is asset-based. The more assets you put in, that goes in the rate base. Going forward, we will need a fundamental shift, because we believe we will need to have platforms that will allow everyone to trade energy, like charging back, etc., but at the moment there's no regulation around it. This is where we need to work to ensure that we allow new business models that, on one side, reduce the cost of electrification, which will be a key element, but on the other hand, also motivate investment in the private sector rather than only.... They should do the investment to invest in business models that will really facilitate the integration of electric vehicles.

Mr. Lloyd Longfield: Is federal regulatory looking at Natural Resources Canada being the owner of that regulation?

Mr. Faisal Kazi: I think it will be a partnership between the different federal agencies and also the provincial agencies. We need to sit together as the private sector, even the universities, and look at the innovation that we have in the country, and then define the regulatory environment.

Mr. Lloyd Longfield: Thank you.

I'm sorry, Ms. O'Connell. I've gone up to my limit. I apologize for that.

The Chair: She's on the list further down, so Ms. O'Connell will get a chance.

Madam Pauzé.

[*Translation*]

Ms. Monique Pauzé (Repentigny, BQ): Good afternoon, everyone.

I want to thank the witnesses for joining us.

My first question is for Mr. Charron from LeadingAhead Energy.

Mr. Charron, do you think that the government must play a role in promoting electric vehicles?

I'm thinking of some type of awareness campaign for the general public. In your document, you said that people are more dependent on gas-powered vehicles because that's what they see.

Mr. Maxime Charron: You're talking about raising public awareness regarding electric vehicles. However, I want to point out that we're seeing a great deal of misinformation on social media or in the advertising campaigns of certain companies or groups.

We really need to inform not only the purchasers or consumers of electric vehicles, but also the dealerships, which have a high turnover of salespeople. These salespeople aren't always aware of market developments. Electric vehicle technology is changing very quickly and in many ways: new vehicle designs, different types of batteries, improved charging speed or the ability to cover a certain distance in winter, for example.

Ms. Monique Pauzé: In the document, you said that most people look at the price listed and don't take into account all the possible savings. The government can certainly promote electric vehicles. That's my understanding.

I'll now turn to Mr. Cedric Smith from the Pembina Institute.

Mr. Smith, you spoke earlier about 4,500 charging stations and 12,000 gas stations. Given the significant benefit of having refuelling sites across Canada, shouldn't the oil companies be partners in this transition and be required, by appropriate regulations, to install fast chargers at every point of service?

[*English*]

Mr. Cedric Smith: Absolutely. We would be strongly in support of such a regulation. I would note that your comment about the DC fast chargers is especially accurate. In terms of charging speed and charging time for vehicles that are going to a gas station, those fast charging times would be especially convenient and especially comparable to the effect of gasoline for traditional internal combustion engine vehicles.

● (1650)

[*Translation*]

Ms. Monique Pauzé: Can you give us an idea of the forecast for greenhouse gas emissions growth if we maintain the status quo and if nothing changes?

[*English*]

Mr. Cedric Smith: In terms of our forecast on GHG emissions right now, transportation emissions are at about 186 megatonnes CO2 equivalent in 2018 for the transportation sector. We do actually see that declining somewhat out to 2030, largely due to the impact of the passenger automotive greenhouse gas emissions standard. Nevertheless, it's still quite significant even out to 2030, which does indicate that there's more work to be done.

[*Translation*]

Ms. Monique Pauzé: Thank you.

Last week, we learned that, in Quebec, the regulations will prohibit the sale of gas-powered vehicles starting in 2035. This will also be the case in California. In Great Britain, the ban will come sooner, in 2030. In other European countries, these regulations will be in effect as of 2025.

Do you think that it would be possible to implement these regulations across Canada?

[*English*]

Mr. Cedric Smith: It definitely is possible when you look at the accelerating pace of climate change awareness and climate change knowledge and these accelerating investments that are happening in Canada and around the world.

On our side at Pembina, California has the intention to ban gas vehicles, which caught us somewhat by surprise, on very strong regulation. Things are very much accelerating. In British Columbia as well, they have a similar proposed ban on gas-powered vehicles as of 2040.

We're going to see a lot of this accelerated action happening in those two main provinces and hopefully spread across the rest of Canada after.

[*Translation*]

Ms. Monique Pauzé: Thank you.

I gather that this would almost tie in with my next question.

In your opinion, should there be a regulated quota for Canadian manufacturing reserved for the Canadian market?

[*English*]

Mr. Cedric Smith: If I understand your question, you're referring to a quota for electric vehicle manufacturing in Canada, and that being reserved for the Canadian market. It depends on what our goals are here. If our goals are just reduced greenhouse gas emissions in Canada, I would advocate that we just allow all the electric vehicles to come into Canada from wherever they're manufactured and put as few barriers in place as possible for Canadian purchasers.

The Chair: Thank you. We'll have to move on.

Ms. Collins.

Ms. Laurel Collins (Victoria, NDP): Thank you so much, Mr. Chair.

My first question is actually for both Mr. Smith and Mr. DiCaro. Specifically, about half of Canadians are living paycheque to paycheque. They're often struggling to cover the increasing cost of rent, child care, medication and other essentials. We recently learned that the government isn't tracking the income of people who are taking advantage of the incentives. Even with the government incentives, we know that the high cost of these vehicles still puts them out of reach for many Canadians.

I have a three-part question. I'm curious as to your thoughts about a means-tested incentive program that would be targeted incentives for low- and middle-income brackets, and then also your thoughts on a used vehicle incentive program and a national scrap-it program.

Maybe the question will go first to Mr. Smith, and then to Mr. DiCaro.

Mr. Cedric Smith: I think it's always important to consider the impacts of the pandemic and to consider the fact that Canadians are hurting right now, to take that into account when we design our environmental policies, and then to try to ensure that equity is part of those policies as much as possible.

One thing we note from the iZEV program is that it does have an MSRP cap that is quite reasonable. The used vehicle purchase program could help make these cars more in range to the average Canadian consumer, or maybe even to a consumer who isn't normally trying to buy a new car and who might be more inclined to buy a used car instead.

In terms of the scrap-it program, Pembina doesn't necessarily have a position on that as of yet. We would note that a lot of the electric vehicle policy in place right now across Canada is aimed at new vehicle sales. As Canadians are getting rid of their old cars naturally, we want them to adopt an EV. A scrap-it program would probably be a bit more ambitious than that and deal with cars that Canadians aren't necessarily deciding to get rid of yet.

● (1655)

Ms. Laurel Collins: Thank you so much, Mr. Smith.

Mr. DiCaro.

Mr. Angelo DiCaro: Thanks very much.

Those are really intriguing ideas. The great part of this study that's being undertaken is that we get to float some of these really creative thoughts forward.

A means-tested approach to vehicle incentives is very intriguing. This is not something on which Unifor has established a particular position, but it makes good sense. These cars are more expensive and that's why incentives are needed, among other things, to bring people to market on those cars. That's important.

On the scrap-it program, there's quite a bit of merit to that. One thing I'm sure this committee knows is that just by virtue of vehicle advances and a lot of stuff happening with internal combustion engine cars, they are becoming more fuel efficient over time. In terms of having a way to not only spur the industry through a really challenging time but also using that to address some of these emissions challenges, other nations have done this. It's something that was certainly discussed in the last economic crisis and hasn't been talked about too much here, but I think there's merit. It's a really intriguing idea about the used car incentive as well.

Across the board, there are good ideas and many more to come for sure.

Ms. Laurel Collins: Thank you, Mr. DiCaro.

I have a follow-up question for you but not on those issues.

Canada has been lagging behind when it comes to producing ZEVs, and it doesn't seem like we've been making sufficient effort to transform the industry and seize the opportunity that electric vehicles offer to the sector. It's really great to see the recent agreement that Unifor made with Ford and Chrysler. It seems to be a really good step in the right direction. Countries like Germany, France, Spain and the U.K. have made significant investments as part of their pandemic recovery packages. We haven't seen the same scale of investment here.

Do you think Canada is lagging behind in this global shift towards zero-emission vehicles? Can you talk a little bit about the need for a coordinated national industrial strategy to support the sector?

Mr. Angelo DiCaro: If I were to characterize it, I would say right now we're at a fork in the road, to build on a really bad metaphor for vehicles in this case, and that's certainly what it feels like.

I will tell you that two months ago there was a view that this was going to be the death knell of the Canadian auto industry potentially, where if we were not going to land what was calculated to be somewhere in the ballpark of $300 billion of investments from OEMs and supplier firms siting these projects around the world, mostly in China and Europe, with Canada being left behind.... The last two months have shown us that there is still fight here. We still have an industry and a competitive one at that. Automakers want to build here and for good reason. I would have been more pessimistic two months ago before bargaining, but now I'm much more optimistic.

As I said in my opening remarks, I'm not going to dwell on the last two months because they don't matter anymore. We got good news, but unless we're going to put policies in to practice.... Despite what others are suggesting, we can't simply put bums in seats in EVs and think we've solved our problem. We've only solved half the problem. This is a plum industry that generates incredible wealth for this country with incredibly good jobs. If we don't put those pieces together, the production side, the supply chain side and the incentive side, we'll have missed a huge opportunity for us, and that would be terrible.

The Chair: There are only 10 seconds left. I could add that to your next round.

Ms. Laurel Collins: I will follow up in the next round.

Thanks so much.

The Chair: We'll go to the five-minute round now starting with Mr. Jeneroux.

Mr. Matt Jeneroux (Edmonton Riverbend, CPC): Thank you, Mr. Chair.

Thank you, witnesses, for being with us here today.

My first questions are for Ms. Goldberg and Mr. Charron on the cost of residential and commercial charging stations.

Do you have the average cost of what it would be for both a household and a commercial building?

Ms. Suzanne Goldberg: On the installation side, the average cost to install in a home is between $300 to $500. For commercial and multi-family, it could be between $5,000 and $7,000. That's just the installation. The charging station itself at home is about $1,000. On the commercial side you're ranging about $5,000 per plug.

The cost to install varies depending on the complexity of the site, for instance, how far is it from the power source. Then costs come down when we look at how many charging stations we're installing at once.

● (1700)

Mr. Matt Jeneroux: An average home in Edmonton, where I am, would be about $1,000 to install.

Ms. Suzanne Goldberg: It would be about $300 to $500 to install, and then the station itself would cost $1,000. That's for the smart connected charging stations that help utilities manage the grid and help reduce costs in terms of managing that additional load, especially at the local distribution level.

Mr. Matt Jeneroux: Would I pay my monthly electrical bill on top of that?

Ms. Suzanne Goldberg: That's correct.

NRCan has estimated that it's 2¢ or 3¢ per kilometre to fuel with electric.

Mr. Matt Jeneroux: Mr. Charron, would you agree with that?

Mr. Maxime Charron: Most of it, yes, depending on the type of.... If you have a single-family house and there's enough power—there's already a bigger panel—in the house, you can get away with what we call in the industry a “dumb charger”. Those chargers can vary between $600 to $1,000, and the smart chargers, as Ms. Goldberg mentioned, would be around $1,000 to $1,200 for the charging station alone.

Should there not be enough power in the home, then you might need a bit of an electrical upgrade. There are low management devices that exist for about $1,000 extra to avoid an expensive new service in the home, but that's for a single-family home.

If we're getting into condos and multi-family dwellings, that is a very different ball game. If you need a new service altogether.... Typically if you start with the visitor stalls, you can get away with about $8,000 for two stalls for dual-port stations, plus whatever installation fees, depending on where the electrical room is located in the building.

We've talked a lot about garage orphans. Right now, 80% of charging is done at home. That is true currently because the first takers of ZEVs were wealthier. We're seeing a lot of people, such as in Vancouver, Toronto, Montreal, parking on the street or having older buildings. It's not really economically sound to do a retrofit on those older buildings, which is why it's also important to provide public charging stations, whether they are fast chargers or level twos.

Mr. Matt Jeneroux: Great.

Could I ask both of you to provide—I'm trying to do the math on the fly here—a bit of an overview of what that would look like, in terms of what it would cost the average family, and perhaps get that back to the committee if you could?

I want to shift gears a little bit. I'm hoping, Mr. Smith, that you might be able to assist on some of this. I'm trying to identify who the individuals are that this incentive is essentially going to support.

In my community, I'm hoping it's going to the average family that is looking for that cost-efficient vehicle and that maybe this helps them out. However, we had documents submitted today, and we realize that the majority—and by majority, I mean a lot more—of the money is going to Tesla Model 3s, as opposed to the more average family car. By “a lot”, that's $70,000 versus $30,000 in what the incentive is broken down to.

I'm hoping you can shed some light on how exactly you think adding more money into the incentive program would help assist that family in my community.

Mr. Cedric Smith: Yes, absolutely. Thank you so much for the question.

The first thing I'd note is that, at least when we're talking about the ISED program, there are manufacturers' suggested retail price ceilings, which is generally about $45,000 to $55,000 per vehicle. We would say that this compares pretty favourably with the price of the average light-duty vehicle that was sold in Canada in 2019, which cost just a bit over $40,000.

The Chair: We're 15 seconds over time. That's a very interesting point, and maybe it can be completed in a few minutes.

We'll go to Mr. Saini, for five minutes, please.

● (1705)

Mr. Raj Saini (Kitchener Centre, Lib.): Thank you, Chair.

Thank you, everyone, for coming this afternoon. It's been a great discussion so far.

The first question I have is for Ms. Goldberg.

We talked about charging stations and infrastructure. One of the things we've seen in studies is that most people do most of the charging at night in their homes.

What kind of method do you think we could employ for those people who don't own a home, live in a multi-use residential building or live in some other type of dwelling that they don't own? How could we also incentivize them or get them to be thinking about buying a ZEV?

Ms. Suzanne Goldberg: Thank you for that question. You make a very good point in terms of the critical importance of having access to reliable charging and that most charging happens at home.

If there is not reliable access at home—and it's difficult, as you said, if you live in a multi-family building or an older building—there are several mechanisms you can use. One is looking at building codes, so that at any time we're looking at new construction for new multi-family buildings, we're putting that basic electrical infrastructure in place. The second is that workplaces have been identified in the literature as a really critical alternative to home charging. It's ensuring that we're encouraging workplaces to install electric vehicle charging, and also ensuring that building requirements, especially new developments, make provisions for the basic electrical infrastructure.

The third is working with municipalities to provide charging infrastructure in communities where we know access to home charging will be limited. These are fast-charging hubs and level two charging in those communities, where vehicles can park overnight. It's also looking at schools and other community amenities where charging might be idle in the evening and individuals can use them overnight.

Mr. Raj Saini: A lot of this charging infrastructure is being led by the private sector, but different connector types and different chargers can only be used for certain vehicles. Is there any way we should be standardizing this to make it easier? If you have to drive someplace and you have to look for a charging station that doesn't fit your car type, you don't know where that will be.

Would it be better to standardize it in some way, if possible?

Ms. Suzanne Goldberg: There's one standard on the level two side. All vehicles can use that, and Tesla has an adaptor. On the fast charging side, you're right, there are three main standards. One that is proprietary to Tesla, and two that are used by different vehicle manufacturers. Our stations typically have both charging ports on them. It's important that government funding programs include and continue to include requirements that both of those ports be available. Ideally, it would be great if we worked towards one standard, but right now, we're working with those two. It's important that both ports are available at any publicly funded fast charging stations.

Mr. Raj Saini: Thank you for that.

Mr. Smith, I wanted to ask you a question about ZEV standards because Mr. DiCaro had mentioned that briefly in one of his responses. I look at what's happening right now in China, where you have a $300-billion investment coming from 10 to 12 companies where they forced.... I shouldn't say forced, but they put standards in place, as you know, where a certain amount of vehicle production must be a ZEV vehicle. The European Union is looking at this also. They haven't made it mandatory, but they're looking at how they can incentivize companies.

Do you think we should be looking at a ZEV standard here in Canada?

Mr. Cedric Smith: Absolutely. This is one of the main things we're recommending at the Pembina Institute when it comes to the uptake of zero-emission vehicles.

One thing we have noticed in our research is that Canada has a pretty significant supply issue when it comes to zero-emission vehicles. Across Canada, only about a third of dealers have offered at least one plug-in electric vehicle. Outside the main provinces of Quebec, British Columbia and Ontario, it drops down to less than one in five. We see a ZEV standard as something that could be useful on the supply side of the zero-emission vehicle equation.

An interesting stat we noted from Quebec is that it's increased the availability of models from about 66% to 92% of what's available in California.

Mr. Raj Saini: Mr. Kazi, could you give me a yes or no answer?

I've been doing some reading about some testing they're doing on inductive charging in either South Korea or Israel. How practical do you think that is?

● (1710)

Mr. Faisal Kazi: It is practical. We see also that with mobiles it will be practical, but more research and development needs to go into that.

The Chair: That's great. Thank you.

[*Translation*]

Ms. Pauzé, you have the floor for two and a half minutes.

Ms. Monique Pauzé: Thank you.

My questions are for Mr. DiCaro.

Mr. DiCaro, like me, you come from a union background. This means that we talk a lot. However, I have only two and a half minutes of speaking time and I have several questions for you. Please answer as directly as possible.

In your document, you spoke about the synchronization of measures and coherent and effective strategies. In your opinion, what role could the development of a multi-level collaborative industrial strategy between Quebec and the other provinces play, given the expertise and experience already acquired in Quebec?

[*English*]

Mr. Angelo DiCaro: I appreciate your comment about how we like to speak a lot, so I was laughing as you said that. That's very good, but you are 100% right.

One of the pieces in the landscape of the auto industry in Canada is that people think this is a southern Ontario proposition and it's restricted to what's happening down in the Windsor to Oshawa corridor. That's not the case. Ten years ago, we were building cars in Sainte-Thérèse, Quebec. Quebec has a long history in auto assembly. They are still a site for auto parts manufacturers. I've seen many presentations from groups in Quebec who are already drawing this supply chain connection between lithium mining in the northern parts of the province to battery engineering to manufacturing. I would even argue that by way of provinces, they are further in thinking through this. A really comprehensive strategy incorporating the production end of things as well as incorporating the supply end of things....

[*Translation*]

Ms. Monique Pauzé: Sorry to interrupt you, Mr. DiCaro.

[*English*]

The Chair: Excuse me, Mr. DiCaro. Madame Pauzé is trying to get another question in.

[*Translation*]

Ms. Monique Pauzé: I do indeed have another question.

I gather that you agree with a collaborative industrial strategy. You're also saying that the benefits are almost immeasurable in terms of job creation and the economy. I would also add the environmental benefits.

Don't you think that, with federal legislation, the Canadian market would be in a better position to meet the demand for zero-emission vehicles?

How would this type of mandate affect your members?

[*English*]

The Chair: Respond very briefly, please.

Mr. Angelo DiCaro: I suppose there would be an added benefit for the federal government to wade in, in this case. I couldn't tell you on a measurable scale what that would mean for future assembly, other than to say it would be an example of how all jurisdictions need to pull these pieces together. Without the federal government involved, I think that would be an omission.

The Chair: Thank you.

Ms. Collins.

Ms. Laurel Collins: Thank you so much, Mr. Chair.

Connecting to this conversation about producing more vehicles in Canada, I'm curious about the barriers and opportunities of that. How can we make sure we're meeting the demand for electric vehicles? Also, what kind of retraining and income supports do Canadian auto workers need to support a just transition to a zero-emissions future?

I'll start with Mr. DiCaro, and then go to Mr. Smith, if he has anything to add.

Mr. Angelo DiCaro: Thanks for that.

This is something we've spent quite a bit of time trying to forecast out. Of the vulnerable sectors of the auto supply chain right now when we talk about transitioning, it's going to be in the powertrain segment of the industry. Engines and transmissions are going to change significantly.

Even forecasts of EV sales globally still project about half the market being filled by ICE vehicles. It seems like commercial trucks, for instance, are absent from these zero-emission vehicle mandates. We have to put that into perspective because Canada sources both the trucks and the cars. That's something that has to be on our radar.

The other piece is that as plants transition, as will happen with Oakville, we have to see how long these transition times will take in our next round of bargaining. I can assure you that, if this is going to be a two-year or a 16-month transition to get that plant retooled, there are going to be questions about income supports for those workers as they retrain and wait for these cars to come online.

This is front and centre. I think the act of collective bargaining gives us an opportunity to explore that. Certainly our employment insurance system and our training systems are going to have to be looked at more carefully.

● (1715)

The Chair: Mr. Smith, answer briefly, please.

Mr. Cedric Smith: Absolutely.

I'll just quickly add on to the great remarks we just heard. Pembina Institute did some engagement with stakeholders in the affected auto sector communities. One thing we will note is that the Canadian auto sector is already in decline, so this thinking about retraining and about a just transition has to happen anyway.

One thing we did find was that a lot of those stakeholders in affected communities showed high levels of enthusiasm to retrain for an electric vehicle future.

The Chair: Thank you.

Ms. Laurel Collins: Mr. Smith, could you send that in writing to the committee, and Mr. DiCaro as well? If either of you have any follow-up information on a just transition for auto workers, could you send some information to the committee?

The Chair: Thank you.

We'll go to Ms. Block for five minutes, please.

Mrs. Kelly Block (Carlton Trail—Eagle Creek, CPC): Thank you very much, Mr. Chair. I appreciate the opportunity to join you here today.

My first question is going to be for Ms. Goldberg.

A quick look shows that there are over 20 charging stations here in Saskatchewan; however, the majority of them are located in our urban centres. While we know that EVs are extremely useful for internal city travel, the long charge times and lack of infrastructure make them completely impractical for rural or farm life.

I'm wondering if you would speak to when the industry or yourself at ChargePoint might be able to give us a timeline on when this might be expected to change.

Ms. Suzanne Goldberg: Thank you.

We are already seeing that vehicle batteries are getting bigger and have longer ranges. There are a number on the market that are 500-plus kilometres. More availability is going to be key for those areas with longer ranges. In the area you're talking about, it's really important to ensure we have infrastructure in our rural and remote areas and in Canada's north, so Canadians can drive coast to coast and within your province.

Where we see an important role for the program that Natural Resources Canada is currently rolling out, as we move forward, is to really focus on those areas in your region in particular to see if these programs are working or if we need to tweak them to ensure that a wide range of entities are investing in charging infrastructure in those areas, so we can connect communities across Canada.

Mrs. Kelly Block: Thank you very much. I appreciate the work that's being done.

I did want to allow Mr. Smith to finish the conversation and complete the answer that he was giving to my colleague, Mr. Jeneroux, in regard to the financial incentives that are being created specifically in regard to the Tesla Model 3.

Mr. Cedric Smith: Yes, absolutely.

Mr. Jeneroux, if I understood the question correctly, talked about how a significant number of EV purchasers are purchasing Tesla Model 3s, which are in that luxury or higher-end segment of the electric vehicle market, and how a top-up of the iZEV program would contribute to equity.

The point I made is that, at least for that program in particular, the federal incentives program, it does cap the vehicle price at about $45,000 to $55,000, so if the Tesla Model 3 was incentivized through that program it would have to be a Tesla Model 3 that cost less than $55,000.

I would also note that data indicates that the average light vehicle sold in Canada in 2019 was about $41,000, which is a bit less than the maximum price for electric vehicles through that program, but as costs go down, we're certain that, at least in terms of that program, it's not going to have very significant detrimental equity impacts.

Mrs. Kelly Block: Thank you for that. I trust that that will provide Mr. Jeneroux with a bit more for future questions.

My last question, I'm assuming, because my time is going very quickly—five minutes tends to go fast—would be for Mr. Bateman.

The primary selling point for many EVs is the reduction in greenhouse gas emissions. We've heard that today. How can consumers be sure that greenhouse gas emissions are not just being pushed behind the scenes into power production?

I think perhaps Mr. Longfield's questions were similar to this. I'm thinking, for example, that China has dramatically increased the amount of coal-fired power plants it uses to produce electricity, and if they make a large push towards electric vehicles, the electricity being used will actually be producing more greenhouse gases. Could you speak to that?

● (1720)

Mr. Patrick Bateman: Absolutely, and thank you, Ms. Block, for the question. I'll be very brief.

There are two key components to this. Number one, there's electricity supply. Within Canada, to meet our Paris Agreement targets, I expect that our emissions will have to decrease by about 80% to 85%—below 2005 levels—by 2030. We definitely have the clean electricity supply coming online.

With regard to the embedded emissions in the vehicles, there's a growing number of studies that show that the life-cycle emissions that would account for emissions that are produced in China are still reduced when we drive them in Canada with Canadian electricity.

The Chair: Thank you. That was right at five minutes on the dot, very well planned.

We have Mr. Baker for five minutes, please.

Mr. Yvan Baker (Etobicoke Centre, Lib.): I'm going to yield my time to Ms. O'Connell.

The Chair: Ms. O'Connell.

Ms. Jennifer O'Connell (Pickering—Uxbridge, Lib.): Thank you.

Thank you, Yvan, for giving me some time here.

Mr. Kazi, my questions are for you. I am a temporary on this committee. My normal committee is national security and intelligence, so when you brought up cybersecurity my ears perked up. We are actually doing a cyber study right now, so this is an interesting point because it will completely change how the manufacturing of vehicles is done.

My first question is in and around how prepared you think manufacturers actually are for dealing with cybersecurity? Do you think they are putting enough expertise into this? As the new technology evolves a lot of times those are start-up companies that partner maybe with larger companies, but they may not have the expertise or financial ability needed for these sorts of investments.

Can you elaborate on where you think the industry is or should be going?

Mr. Faisal Kazi: Thank you so much for that question.

I think this is a real concern, because cybersecurity is something that is not static. It is always moving, so even if you are prepared today, it doesn't mean that you are prepared tomorrow.

To your point, there's a lot of work to be done, and I think we need mechanisms and standards to ensure the cyber standards are met. Some of the large companies around the world, such as Cisco or Airbus, etc., have defined a charter of trust, which is a self-imposed kind of regulation on themselves but also on their supply chain to adhere to certain standards, which will give us a bit of comfort on what the standards are. I believe that we would need that kind of a charter for electric vehicles, especially because it's not only about charging. It's also about commercial transactions, so this needs to be done.

From the Canadian perspective, I can tell you that we at Siemens are launching our cyber-defence centre in Atlantic Canada, with many other companies, together with the Government of Canada and supported by the Government of Canada. That provides managed services, which would be always scanning the different systems.

There are two ways. The one is inherent cybersecurity checks within the equipment, and I think there is a lot of work to be done. The other one is the scan of the overall system through a cyber-defence centre kind of element to make sure that nothing silly is going on around there.

Ms. Jennifer O'Connell: Thank you.

Do you think the private sector in your field has a full grasp of what the cybersecurity threats are at any given time here or around the world?

Mr. Faisal Kazi: I think the answer would be.... I would say no. I mean, people know, but it's not 100%. No one can guarantee that we are 100% sure, I think. We have a grasp of about 80% or 90%, but as we say in cybersecurity, you are as strong as the weakest link.

There is work that needs to be done, but we know from different industries like the power generation industry, the grid industry, that you can secure your supply chain as well as your system. It's possible, but this effort needs to come in, because the systems are being developed.... We had a discussion around the interoperability of the different systems. At the moment, we do not have that standard, which we need to define. I think that would be an opportunity to make sure that it is cyber-safe.

● (1725)

Ms. Jennifer O'Connell: Thank you.

Do you see this being an ongoing cost for research and development? Would there be an opportunity, at the very least, for governmental supports or programs to help point the private sector in the direction of investments and things like that, and then what sorts of supports? Ultimately it's in Canada's cybersecurity interest if vehicles, charging stations and, basically, secondary types of equipment or industries are protected. Has there been any discussion around the partnership with the government on this?

The Chair: Answer briefly, please.

Mr. Faisal Kazi: I always say that we have to take a holistic approach as we ramp up the electric charging. There is discussion with the government. The government is supporting it, but more works needs to be done in order to do it safely.

The Chair: Thank you very much.

Ms. Jennifer O'Connell: Thank you, and thanks, Yvan, for the time.

The Chair: We have come to the scheduled end point of our meeting.

First of all, I would have to ask the witnesses if they could stay longer, but is there a desire to go on a little longer? Okay, what about one more round?

Can the witnesses stay for one more round? We will be done by 5:50 p.m.

Mr. Faisal Kazi: Yes, I can.

The Chair: Can everyone else?

Mr. Maxime Charron: Yes. I'm good here.

The Chair: Okay.

Please say no and we will go by process of elimination. I don't hear any noes. We will continue.

For the third round, we have Mr. Albas for five minutes.

Mr. Dan Albas: Thank you again, Mr. Chair, and thank you again to our witnesses.

I'm going to start with you, Ms. Goldberg. There is obviously a tremendous amount of integration in North America, whether we're talking about Mexico, Canada or the United States, in terms of our auto integration and in terms of the cars we drive, and obviously we also import several different kinds of cars.

What kind of harmonization in terms of standards do you think is helpful for electric vehicle adoption? Do you have any thoughts on that?

Ms. Suzanne Goldberg: With respect to electric vehicle charging and specifically to regulations around measurement and how we enable energy-based pricing, as I mentioned in my opening remarks, Measurement Canada has engaged in a process to help enable energy-based pricing that will involve two things: looking at how we certify the meters inside charging stations and the regulatory requirements for charging station owners.

On the side of the technical requirements for certifying those chargers, there is precedent in the U.S. A federal, non-regulatory agency has set guidelines for those technical specifications. California has been the first state to adopt it. As manufacturers in this space, we're typically operating, as you alluded to, in a North American market, so we would encourage harmonization as much as possible to look at what the U.S. has done and see how we can integrate that into our Canadian regulation for measurement of charging station meters.

Mr. Dan Albas: I know that there was originally a body of both American and Canadian officials that would speak to try to further harmonize, based on the fact that we're often making these high-quality vehicles but then exporting them to the United States or other places.

Can you go a little further as to the issue specifically with weights and measures?

Ms. Suzanne Goldberg: First of all, the Electricity and Gas Inspection Act, as my colleagues from the Canadian Electricity Association referred to in a past session, was not designed with charging stations in mind. There's the technical side where we need specifications for how we certify those meters. Having those meters certified by Measurement Canada means that we can use those devices to enable energy-based charging, and that's good for transparency for drivers when they're charged for what they use. On the station owner side, they have transparency in terms of their cost.

● (1730)

Mr. Dan Albas: Right now, what is the average consumer not getting? Why is the system deficient right now because of that?

Ms. Suzanne Goldberg: Right now, station owners are limited to charging per minute, and because vehicles draw different amounts of power over the same period of time, we're essentially having a cross-subsidization situation. Two vehicles might pull in. The station might have the same level of power, but over a 30-minute period of time, one vehicle that has a bigger battery might be drawing more. If we're charging them the same price per minute, we're essentially cross-subsidizing and, as the station owner, you don't have a really good idea of what your costs are to cover because you just have a flat fee per minute.

Mr. Dan Albas: Thank you for explaining that.

Please continue. Before I dragged you into talking about the consumer point, you were going somewhere else.

Ms. Suzanne Goldberg: I was just noting that, in addition to the technical side, there are the regulatory aspects of the Electricity and Gas Inspection Act that have obligations that make sense for one-way flow of energy from meters owned by the utility and individual homes, but now we have station owners who might be a small pizzeria or a small local grocery store. We need to make sure that the obligations within the act and regulation protect consumers first and foremost, but also reflect the reality of who owns it, and we're not introducing new barriers to the critical investment in charging infrastructure that we need to meet our goals.

Mr. Dan Albas: That's a really interesting question, because there are different people getting involved in this business. It was raised earlier by Madame Pauzé that perhaps there needs to be regulations on gas stations. Is that really a way for us to consider thinking about these, or should we be a little more open to other free market responses?

Ms. Suzanne Goldberg: I think it's a mixed approach. We're looking at a new paradigm of fuelling. People don't drive to a location to fuel. They fuel where they park. Gas stations along highway corridors have that infrastructure. We also need to look within city contexts, our homes and our workplaces, where people are dwelling the longest. It's a combination of fast charging and slower charging. If you're parked at home or your workplace for eight hours or four hours, a level two is sufficient. We need to have a mix and look at all the mechanisms to ensure that we have infrastructure in all those locations.

The Chair: Thank you very much.

Go ahead, Mr. Schiefke.

[*Translation*]

Mr. Peter Schiefke (Vaudreuil—Soulanges, Lib.): Thank you, Mr. Chair.

I want to thank our guests for taking the time to join us today.

As recently as November 2, the Canadian and Quebec governments announced a contribution of nearly $3.6 million for Propulsion Québec, Quebec's cluster for electric and smart transportation, to support innovation in the mining sector.

The funding will support the design and development of an electric propulsion system for a 40-tonne mining truck, a battery solution and fast charging infrastructure suitable for mining operations. The project could prevent the emission of over 220 tonnes of greenhouse gases a year.

Could the witnesses elaborate on how the heavy-duty vehicle sector could play a role in reducing greenhouse gases through electrification?

The Chair: Who are you asking?

Mr. Peter Schiefke: I'm asking the representative of the Pembina Institute.

The Chair: Mr. Smith, the floor is yours.

[*English*]

Mr. Cedric Smith: As just a bit of background, the Pembina Institute represents a national coalition of businesses looking to accelerate low-carbon solutions in trucking, especially in last-mile solutions. This is an area that is a bit more of a nascent market than the electric car area. There are challenges to electrification in this area that are not in electric cars, or are not as significant in electric cars.

The sales are much lower. Internationally, sales of electric, medium and heavy-duty vehicles were about 3,000 units annually until 2013, and they peaked at about 200,000 in 2016. In Canada and the United States, it's especially nascent. There were only about 600 units sold in 2019, and the vast majority of those were in the United States.

In Canada again, it's mainly a number of initial projects or pilot projects. There's the AZETEC project, which is trucks that are running from Calgary to Edmonton, but it's something that is in the initial stages at the moment. At the same time, there's good reason to be optimistic.

● (1735)

Mr. Peter Schiefke: The next question is regarding hydrogen vehicles. The electrification of our vehicles across the country is obviously an important step toward reducing our GHGs. Last week, our government tabled the net-zero accountability act, which would aim to set Canada on the path to net zero by 2050. We know that electrification of transport will play a significant role, obviously, in getting us there. With that in mind, we also see momentum building around hydrogen fuel cell vehicles.

Once again to the Pembina Institute, how can we promote the purchase of those hydrogen-powered vehicles, and how would we balance those incentives with our desire to increase the use of electric vehicles?

Mr. Cedric Smith: That's a fascinating and great question.

The Pembina Institute does consider hydrogen fuel cell electric vehicles within that broader electric vehicle banner. Traditionally, zero-emission vehicles are considered to be hydrogen, battery electric or plug-in hybrid electric. If you look at, for example, the zero-emission vehicle infrastructure program, it does provide infrastructure incentives to those hydrogen-powered vehicles. Similarly, the iZEV program, by my understanding, covers all types of zero-emission vehicles.

What we would really like to see is specified incentives, specifically for the heavy-duty sector. We would like to see something on a national scale that replicates what we're seeing with the specialty-use vehicle incentive program in British Columbia, which does fund these programs.

At the same time, we're realizing that those prices are higher, so there's also room for non-financial incentive programs as well. A lot of these green vehicle licence plate programs you're seeing across the country exclude commercial vehicles, either explicitly or implicitly. We'd love to see them, to the extent that's possible, included there. There's room for low-emission zones. There's room for curbside management practices in municipalities that also incentivize the uptake of these zero-emission vehicles. This is really an exciting new space that we're seeing, and there's a lot of research to be done here.

[*Translation*]

The Chair: Ms. Pauzé, the floor is yours.

Ms. Monique Pauzé: Thank you.

I want to thank all the witnesses for agreeing to stay a little longer.

For the two and a half minutes that I have left, I'll do things a little differently. I'll conduct a short survey.

You all stated, either verbally or in writing, your positions on the importance of the clean fuel standard, on the need to regulate sales targets for manufacturers, on the maintenance of provincial and federal financial incentives, and on charging infrastructure.

I'll ask just one question. I'll identify you one at a time so that you can quickly answer yes or no.

Do you see a federal mandate on zero-emission vehicles as the next step to ensure an effective transition in the sector?

[*English*]

The Chair: We'll start with Ms. Goldberg.

Ms. Suzanne Goldberg: Just to clarify, is it vehicle emissions regulations?

[*Translation*]

Ms. Monique Pauzé: Yes, I was talking about legislation.

[*English*]

Ms. Suzanne Goldberg: Yes, I agree.

[*Translation*]

The Chair: Mr. Charron.

Mr. Maxime Charron: Yes.

[*English*]

The Chair: Mr. Kazi.

Mr. Faisal Kazi: I agree.

The Chair: Mr. Smith.

Mr. Cedric Smith: I agree.

The Chair: Mr. DiCaro.

Mr. Angelo DiCaro: Yes.

The Chair: Mr. Bateman.

[*Translation*]

Mr. Patrick Bateman: Yes, me too.

Ms. Monique Pauzé: Do I have a few minutes left?

The Chair: You have about 45 seconds left.

Ms. Monique Pauzé: My next question is for Mr. Kazi.

Your organization is international. We know that Europe has a financial mechanism called the “bonus-malus” system. This tax method is designed to fight greenhouse gases. Consumers are steered towards purchasing vehicles with low greenhouse gas emissions.

In your opinion, could we consider using this type of method here in Canada?

[*English*]

Mr. Faisal Kazi: I'm sorry. I didn't fully understand the question. I really apologize.

● (1740)

[*Translation*]

Ms. Monique Pauzé: I wanted to talk about another possible solution, the “bonus-malus” system. We know that, in Europe, this tax method is used to fight greenhouse gases. Consumers are steered towards purchasing vehicles with low greenhouse gas emissions.

In your opinion, could we consider using this type of method here in Canada?

[*English*]

Mr. Faisal Kazi: I think so. It would be useful.

The Chair: Thank you very much.

Ms. Collins.

Ms. Laurel Collins: Thank you, Mr. Chair.

Of my last two questions, the first one goes to Mr. DiCaro.

You mentioned the importance of environmental and labour standards in terms of the parts that are coming into Canada, and I was wondering if you could flesh that out a little. I'm going to cut you off at about a minute so that I can get my second question in.

Mr. Angelo DiCaro: I would say that there's a globalized nature to how the industry works. Everyone knows this. One of the advances that we've been making within trade policy, especially under the USMCA, is looking at how labour standards and stronger environmental standards can play a role. Part of developing a national auto strategy is that we are going to have to rethink some of these trade policies that we have in place, including labour, as well as policies that restrict our ability to localize content rules when it comes to fleet purchases and things of that nature.

Ms. Laurel Collins: With regard to that—specifically, trying to incentivize made in Canada vehicles—what do you see as the barriers?

Mr. Angelo DiCaro: I think some trade agreements become the barriers, trade agreements like the Canada-European Union trade agreement, which tries to put in place roadblocks for provinces, municipalities and the federal government to establish local content requirements for all types of vehicles: rolling stock vehicles, anything through public procurement. In some cases—

Ms. Laurel Collins: Thank you so much, Mr. DiCaro.

My last question is for Mr. Smith.

We know that Canada's coming out with its net-zero accountability legislation. Canada has missed every single target that it's set. It is on track to miss its targets for zero-emission vehicles sales. Could you maybe end off with how important it is that we reduce our emissions through transportation and meet our climate targets through the sector?

Mr. Cedric Smith: First of all, with respect to that legislation, we're really encouraged to see this being put into law—the net-zero by 2050 target. I want to re-emphasize how ambitious that target is. Recent projections from the International Energy Agency state that about 50% of passenger car sales would have to be electric by 2030 in order for us to meet that target. The reason they say that is because we need to front-load these electric vehicles because if we do front-load them, then that increases the benefit as those vehicles go through the stock. It also increases the emissions benefits from the grid, the reduction in emissions from electricity. It is so important—

Ms. Laurel Collins: Mr. Smith, just out of curiosity—

The Chair: Be very brief, please.

Ms. Laurel Collins: The net-zero legislation is missing a 2025 milestone target. Given the importance of front-loading this, would you want to see something like a 2025 milestone target in there?

The Chair: Give kind of a yes-or-no answer.

Mr. Cedric Smith: It's always good to be aggressive when it comes to climate.

The Chair: That would be a yes, I guess.

Mr. Albas, you have [*Technical difficulty—Editor*].

Mr. Dan Albas: Thank you, Mr. Chair.

Mr. Smith, when it comes to some of these incentives—obviously, Mr. Jeneroux raised the issue of Tesla—is the Pembina Institute concerned that different companies may utilize technology protection measures that artificially limit the capacity of an electric vehicle?

Mr. Cedric Smith: Could you expand on that?

Mr. Dan Albas: To my understanding, you can purchase a model and receive the government subsidy, but a technological protection measure stops it from having the full range unless you pay more for it. Basically, you have an engine and a battery that can take you *x* kilometres, but it's artificially limited in order to sell you the engine.

I'm just asking if you think this practice should be examined by the Government of Canada, or if you think this public subsidy should go to cars where these measures can be put in place.

● (1745)

Mr. Cedric Smith: I would say that if there are any restrictions that reduce the potential for electric vehicles to contribute to greenhouse gas reductions and reduce the ability of an average family that's looking to do their part to move Canada to net zero, and the restrictions on those are artificial, then we would hope that, as much as possible, those could be cleared out over time.

One thing I would note in terms of the iZEV program is that it does offer higher purchase incentives for longer-range vehicles than for shorter-range ones, specifically within that plug-in hybrid segment.

Mr. Dan Albas: Okay.

To my understanding, many different car manufacturers will now be coming out with their own versions of particular vehicles, trucks and perhaps jeeps and other kinds, but obviously these will require more batteries, etc. You mentioned that perhaps there should be some sort of subsidy for industry-type vehicles, but jeeps and those other kinds of vehicles are already very expensive compared with small cars.

Do you think the government should maintain the current amount that's given in terms of subsidy?

Mr. Cedric Smith: That's a great question. I think one thing to keep in mind is that the subsidy amount is not very flexible. If you're purchasing a zero-emission vehicle that's battery electric or hydrogen fuel cell electric, you're getting $5,000. As far as I'm aware, it doesn't matter if it's a jeep or a smaller car.

I think at that point, it would be up to the consumer on whether or not they want to pitch in that additional amount of extra dollars on top of that. I think if they're willing to do that, and they're willing to add to the GHG emission reductions by doing so, personally, at this point in time, I don't see any reason why we should be limiting their ability to do so.

Mr. Dan Albas: Okay.

I have a quick question before I switch to Mr. Kazi. Let me set the context here. You mentioned that one-third of Canadians live in multi-family residential-type arrangements, such as apartment buildings and condo blocks. In British Columbia, for example, many of these are called “strata”. I know that many people can't get basic insurance because the cost has gone up so astronomically.

Where individuals want to get these electric vehicles or charging stations, how do you suggest we deal with some of these issues?

Mr. Cedric Smith: That's a great question. I'll try to be quick on this.

I think it comes to two main ways of doing it. The first is making it easier to install these electric-vehicle charging stations within the MURBs or within the garage or within areas. The second is an increased amount of publicly available charging infrastructure, specifically in the areas around where a lot of these garages for a lot of these apartments and condominiums exist. That would include on-street charging and publicly available charging infrastructure.

In terms of making it easier within the buildings, one thing we note is that a lot of these incentive programs offer higher incentive levels for the MURB charging infrastructure than for single-family homes. That's something that we think is definitely important as well.

The Chair: Thank you.

We have one more questioner.

Mr. Baker, are you interested in asking some questions?

Mr. Yvan Baker: Absolutely.

[*Translation*]

Thank you, Mr. Chair.

My question is for Mr. Smith, the representative of the Pembina Institute.

Today, General Motors announced that it will manufacture only zero-emission vehicles and that it will invest approximately $7 billion by 2025 in these types of vehicles. This suggests that the company believes that it can make a profit in this market.

Last week, the Quebec government announced that it will suspend the sale of gas-powered cars in 2035. What do you think of this announcement? Should other provinces or countries follow suit?

● (1750)

[*English*]

Mr. Cedric Smith: The Quebec ban on gasoline-powered vehicles is essentially not equivalent, but it's comparable to a zero-emission vehicle standard that requires 100% of vehicles to be either low emitting or zero emission. Depending on how the ban is structured, I'm not sure the extent to which it takes hybrid electric vehicles into consideration. At Pembina we're always encouraged by aggressive climate action and, again, I would note the figure that, by 2030, 50% of passenger car sales would have to be zero emission in order for us to meet that target.

[*Translation*]

Mr. Yvan Baker: Is this something that the other Canadian provinces should explore?

[*English*]

Mr. Cedric Smith: Absolutely, we always encourage strong research and exploring every opportunity to reduce greenhouse gases in Canada.

[*Translation*]

Mr. Yvan Baker: How much time do I have left, Mr. Chair?

The Chair: You have about three minutes left.

Mr. Yvan Baker: I have another question for Mr. Smith, and if I have time, I have a question for Ms. Goldberg.

Mr. Smith, in your opinion, are any countries leading the way when it comes to legislation that encourages a transition to zero-emission vehicles?

[*English*]

Mr. Cedric Smith: I would say outside of Canada one jurisdiction that we always refer to when we're looking at best practices when it comes to ZEVs is California within the United States.

[*Translation*]

Mr. Yvan Baker: Why?

[*English*]

Mr. Cedric Smith: California has often been a leader when it comes to a lot of these different zero-emission vehicle programs. An example is that California has had some type of ZEV standard in some form in place since 1990. They also are significantly ahead when it comes to electrification of heavy-duty trucks through their incentive program for that class of vehicle. I forget the name right now.

[*Translation*]

Mr. Yvan Baker: How much time do I have left, Mr. Chair?

The Chair: You have about a minute and a half left.

[*English*]

Mr. Yvan Baker: My next next question is for Ms. Goldberg.

I'm just wondering if you could opine on an issue. It's a similar question to what I asked Mr. Smith, but in the context of what you are talking about. Are there countries or jurisdictions that you feel are further ahead of others in the context of the things that you were recommending?

Ms. Suzanne Goldberg: Not to pick on California again, but California, as Mr. Smith has mentioned, has been a real pioneer since the nineties, and Norway as well. They've taken a different approach where they've included a lot of tax credits and subsidies. That approach works in that environment and that culture. I think in California it's a little more analogous to Canada. What they've done is that they've looked at supply and demand and really understood that we are transitioning from a 100 years of fuelling, manufacturing and using vehicles, and that we need a comprehensive suite of policies. In addition to what Mr. Smith mentioned, they are leading on measurement in terms of being the first state to adopt the guidelines set by the federal department in the U.S.

The other thing I'll point out is that the utilities in California have been actively engaged, and they've worked with the regulator to make critical investments to help leverage private capital to support infrastructure deployment across the state. The last thing I'll say is that we always talk about California, but I will acknowledge that there are about 45 states in the U.S. that have some form, either through their utility or through their state, of either incentive or regulation. Mr. Smith mentioned supply-side policies. As a mandate on the consumer vehicle side, there is also the clean truck rule, which is a similar supply-side mechanism for trucks, and that is aiming towards having 100% zero-emission vehicles in 2045. I will note that there are about 15 other states that have signed on to both of those policies. It's not just California, but they are the leader.

The Chair: Thank you.

[*Translation*]

I want to thank the witnesses.

I think that we learned a great deal from their presentations today. I want to thank them for being here to provide information on this important issue.

My fellow committee members, we'll be holding our final meeting for this study on Wednesday. On Monday, we'll discuss the report with the analysts and address future business, including Ms. Collins' study.

On December 2, the minister will meet with us for one hour, regardless of what time we start the meeting. This means that, if there are votes and if we start later than the scheduled time, he will still appear for one hour. The meeting will focus on the estimates and supplementary estimates (B).

That's what lies ahead next week.

Are there any questions?

● (1755)

Ms. Monique Pauzé: Yes, Mr. Chair.

[*English*]

The Chair: I have Ms. Pauzé, and then Mr. Albas.

[*Translation*]

Ms. Monique Pauzé: I thought that the minister was mainly coming to speak about plastics regulations.

Did I misunderstand?

The Chair: There will be a study on plastics. It's Mr. Jeneroux's study, I believe. I don't know whether the minister is scheduled to come to the committee for that study.

On December 2, the meeting will focus on estimates.

Mr. Albas, the floor is yours.

[*English*]

Mr. Dan Albas: Thank you, Mr. Chair.

I have just a quick question. We're meeting with the minister on the supplementary estimates. Is that right?

The Chair: Yes, that's on December 2.

Mr. Dan Albas: Okay. Could you just make sure that the deputy minister is there? I would like to ask questions to him in his capacity as an accounting officer.

The Chair: My understanding is that although the minister will be with us for one hour, the officials will stay for longer. I imagine the deputy minister will be there, but it's been noted.

Mr. Dan Albas: Okay. Thank you, Mr. Chair. Perhaps you can make sure that will happen. Obviously the deputy minister has important things, but if the minister can make time for this committee, I'm sure the deputy can.

The Chair: Of course.

There being no further questions or issues, I thank you all. Thank you to the witnesses.

We'll see you on Wednesday for our last meeting on this study.