
OPENING

*****I am pleased to have this opportunity to talk to you about Natural Resources Canada's measures to support the decarbonization of transportation.

I want to thank my colleague(s) from Environment and Climate Change Canada for [his/her] great overview.

The efficient movement of people and goods is an essential part of a strong and resilient economy. Given the impacts transportation has on the environment, decarbonizing it will be critical to achieving net zero by 2050.

For more than two decades, Natural Resources Canada has been working to ensure consumers and businesses have the information they need to choose the most fuel efficient, lower carbon options to meet their transportation needs. And for four decades, NRCan has been providing support for zero emission vehicle technology innovation.

Over this time, our programming has spanned the transportation value chain, addressing key barriers at every turn, from incenting low carbon fuel production, to end-use and all of the essential enabling components in between, like the development of code and standards, deployment of charging and refuelling infrastructure, awareness and education and much needed research, development and demonstration of alternative fuels, vehicles, and next generation infrastructure.

Our current activities deliver on commitments made in the Pan-Canadian Framework for Clean Growth and Climate Change, the Generation Energy Council Report, and Canada's zero emission vehicle sales targets.

Our existing suite of programs builds off our long-standing experience to ensure we continue to meet the needs of consumers, commercial fleets, and industry more broadly, in the rapidly evolving transportation sector.

And we're achieving results! Specific programs include:

- The recently modernized **enerGUIDE label for vehicles** and our on-line annual Fuel Consumption Guide, that now includes zero-emissions vehicles. We're also developing customizable apps that make personalized information available based on an individual's day to day driving behavior.
- We also know it is essential to support consumers through the entire consumer continuum, as they consider purchasing a new advanced technology vehicle – an EV for example.

They must go from general awareness, to real knowledge, acceptance, adoption and hopefully replication, if the experience is positive. This requires different interventions at each phase and we have programming that does just that.

- The success of our awareness programming is fully dependant on the strength of our strategic partnerships with industry, provinces, territories,

municipalities, academia, and non-government organizations.

- A consumer or fleet manager's decision to purchase an advanced technology vehicle is highly influenced by the availability of charging and refuelling infrastructure where and when they need it. We have all heard of "range anxiety" as a key barrier to adoption.
- That is why we are delivering more than \$300M in **electric vehicle and alternative fuel infrastructure programming** through which:
 - We are supporting the establishment of a coast-to-coast network of electric vehicle fast-chargers as well as chargers where Canadians live, work and play;
 - natural gas refueling along key freight corridors; and hydrogen refuelling stations in metropolitan areas where these vehicles are being deployed.

- We invest in innovative charging and refuelling solutions through real-world technology demonstrations that help Canadian stakeholders implement new technologies in market segments such as multi-unit residential buildings, electric bus charging infrastructure and autonomous vehicles.

- Canada's federal labs also support this effort. For example the National Research Council is developing new electric motor designs that use less heavy rare-earth elements to bring down the cost of motors while maintaining their performance and efficiency.

- Other NRCan innovation programs such as our **Clean Growth Program** is investing in two underground mining vehicle electrification projects. This will demonstrate the technical and economic viability of not only the electric vehicles in this harsh environment but also the positive impact on air quality in the mines.

- Meanwhile, a project under the new **Breakthrough Energy Solutions Canada** will be supporting the development of an ultra-fast charging technology that could help accelerate the mass adoption of electric vehicles.
- We are also working with industry, the provinces and territories and the United States – through the **Regulatory Cooperation Council** - to develop and align codes and standards for low carbon vehicles and charging and refuelling infrastructure.

These activities ensure new technologies can safely enter the market, and that they are fully compatible and inter-operable across all jurisdictions. For example when driving on vacation to the sunny south, consumers need to know, that when it is time to stop and charge their vehicles, that the charger will work with their vehicle.

- To further tackle consumer range anxiety and support freight operators to make day to day

charging, refuelling, and trip planning easier, we have also partnered with the US Department of Energy to develop and maintain an **online interactive map** of all publically available electric and alternative fuel stations in Canada and the US.

- Whereas many of our activities focus on light-duty transportation, we know that as the economy grows, and demand for just-in-time delivery continues to increase, emissions from freight will grow with it. That is why we are delivering programming that targets greening the freight sector. This includes:
 - Delivering the Canadian version of the US EPA's **SMARTWAY Program**, which enables shippers and freight companies to benchmark their fuel usage and identify areas for continuous improvement.
 - Through our **Green Freight Assessment Program**, we're also helping freight companies asses their fleets and overall operations, to identify areas where retrofitting with fuel

efficient technologies, and fuel-switching can reduce fuel use and lower emissions as well as supporting them to implement these changes.

- But we know that how you drive the vehicle also plays a role in your fuel use and resulting emissions, so we have worked with industry, and governments to develop a **master curriculum for fuel efficient driver training** which is being used in driver training schools across Canada and is being emulated and delivered in several countries in South America.
- Taken together, these actions are helping freight companies to drive down both their fuel costs and emissions, ensuring they remain competitive in an industry where the profit margins are very tight.
- We are also taking action on our government fleet. Through our **Greening Government Fleets initiative** – we help analyze fleet usage using telematics, and determine the least emitting options to continue to

meet the fleet's operational needs – including identifying opportunities for downsizing a fleet, electrification and fuel switching, as well as the supporting infrastructure required.

But, our programming does not just focus on electrification. We know that in a net zero future, Canada's economy will be powered by two essential energy forms, clean power and low carbon fuels. We therefore also enable and encourage fuel switching to lower carbon fuels like renewable natural gas, renewable diesel, and hydrogen. Diversifying the low carbon fuels we use, is essential as we know that there is no single fuel or technology that fits all operations.

One important and growing opportunity for fuel switching is hydrogen. For the last 3 years we have been working with governments at all levels, the private sector, academia, and Indigenous organizations, to develop a **Hydrogen Strategy for Canada**.

Expected to launch this fall, the Strategy will lay out an ambitious framework and foundational actions that

cement hydrogen as one of the key pathways to achieve our goal of net-zero by 2050, driving down emissions in some of the hardest to abate sectors of our economy, including transportation, resource extraction, mining, and industrial processes. It also positions Canada to be a supplier of choice to the world, for low carbon hydrogen and the technologies and services required to use it.

Our actions to decarbonize transportation don't just stop at our borders, either. Through a variety of bilateral and multi-lateral *fora*, like the **Clean Energy Ministerial**, we collaborate with governments around the world to foster greater electrification and fuel switching in transportation – including in passenger cars, buses, and freight – as well as across the other sectors of the global economy.

- In May 2019, at the Clean Energy Ministerial held in Vancouver, we launched the new **CEM Hydrogen Initiative**, which is the cornerstone of global hydrogen deployment efforts.

- At CEM 2020, last month, Canada led the development and launch of the **Global Commercial Drive to Zero Campaign**, focussed on electrification of medium and heavy-duty vehicles,
- As well as a new **Biofutures Initiative**, which is facilitating greater production and use of advanced biofuels across the economy.

We see international collaboration as essential in the global path to net zero, and we're helping Canada lead the charge, showcasing our technologies and innovative spirit on the international stage, which can lead to both export market growth for Canadian products and services, and can attract direct foreign investment to Canada.

Decarbonisation of transportation will take an all-of-government approach. As you will hear today, that is what the Government of Canada is doing, working with all levels of government, including international partners and the private sector to take action across the entire value-chain.

Thank you for the opportunity to present today and I look forward to seeing how the work of this Committee could help to further inform our policy and program development.