EcoCAR 2009 Opening Ceremony Remarks
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Remarks by Lynda Palombo
Senior Manager of Business Strategy
Hydrogen Fuel Cells and Transportation Energy Group
Natural Resources Canada

Good afternoon ladies and gentlemen, my name is Lynda Palombo and I am Senior Manager of Business Strategy at Natural Resources Canada. I am here representing the Government of Canada on behalf of Nick Beck who unfortunately could not be here with us today.

It is an honour for me to take part in the official launch of the EcoCar Challenge. I would like to thank all of you for joining us, especially those who have travelled great distances. It truly demonstrates the high-level of commitment that you all have displayed in helping get this competition off to such a great start.

It is a great pleasure to have you all here in Canada, and I hope that you will find some time out of the very busy schedule you have ahead of you this week to discover some of the many great things Toronto has to offer.

Initiatives like EcoCar are prime examples of what can happen when industry, academia and governments work together. I would like to take this time to thank all the sponsors, especially our headline sponsors the United States Department of Energy and General Motors. Also, I would like to thank some of our local sponsors the Government of Ontario, the City of Toronto, Ontario Power Authority, Ontario Centres of Excellence and the Hydrogen Village.

Natural Resources Canada has been supporting student vehicle competitions since 1989 with a goal to help develop the next generation of environmentally conscious automotive engineers. This year we partnered with another key Canadian government department, Transport Canada. Our joint effort, reinforces the Government of Canada's commitment to addressing clean, alternative and advanced automotive technologies.

In Canada, our transportation sector accounts for approximately 36% of total energy use and 25% of greenhouse gas emissions. Developing alternative technologies is the key to reducing greenhouse gas and smog related emissions associated with transportation. It also provides for new economic opportunities.

Natural Resources Canada works with governments, industry and academia to support the development of a number of transportation technologies. We are happy to say that several of the technologies that we have been developing with Canadian industry over the last

several years have been integrated in to some of the vehicle architectures that we will be hearing about throughout this week.
Encouraging the next generation of automotive engineers to take on the challenge of reducing the impact on the environment, as they design tomorrow's vehicle is a key step forward to meeting our goal of a clean transportation future.

Competitions such as this demonstrate that clean innovative transportation technologies are a reality and that one day soon they will be the mainstream in the transportation marketplace. It also provides students with a hands-on, real world introduction to the automotive industry, learning valuable skills and possibly launching careers in the process.

EcoCAR showcases the knowledge and creativity of some of the brightest students from North America; it is this sort of innovative thinking that will help pave the way towards a cleaner and healthier future in transportation technology.

I would now like to introduce our first speaker from the US Department of Energy. Mr. Patrick Davis is Program Manager of the Vehicles Technologies Program within the Office of Energy Efficiency and Renewable Energy. Mr. Davis's is responsible for research funding for hybrid drivetrains, advanced batteries, lightweight materials, advanced combustion and fuels, vehicle system integration and deployment activities. Please join me in welcoming Pat Davis.

Remarks by Mr. Patrick Davis
Program Manager of the Vehicles Technologies Program
Office of Energy Efficiency and Renewable Energy

Welcome ladies and gentlemen to the 2009 EcoCAR: the NeXt Challenge first-year competition opening ceremony. First, I would like to thank the Canadian Government for hosting this year's event and our colleagues from the U.S. Consulate.

I would also like to thank the 17 universities, the professors and of course the sponsors. I would especially like to thank General Motors for being here this week to participate in this one of a kind student engineering competition. This important partnership aims to inspire and support the next generation of scientists and engineers around the common goal of sustainable mobility

DOE has more than a 20-year history of sponsoring student competitions – many in partnership with GM. It is not a Departmental hobby it is a commitment that has roots in our basic mission to promote scientific and technological innovation. More specifically, the Vehicle Technologies Program strives to improve efficiency and reduce emission, while catering to a diverse energy portfolio. The Vehicle Technologies Program is literally is driving North America towards a cleaner, more efficient future.

Together, GM and DOE are working to develop America's future advanced automotive engineers. And we're doing it by giving talented young people the chance to put their education, skills and ideas to practical use – not by simply donating money to their schools, but by providing them with the tools, mentors and physical means to accomplish their goals.

The 17 participating universities are challenged to reduce the environmental impact of a 2009 GM Saturn VUE by designing, developing and implementing a vehicle propulsion system that minimizes fuel consumption and emissions and encourages energy diversity, while still maintaining the vehicle's utility, safety, and performance.

First, I would like to acknowledge all of the teams for their hard work and commitment to this competition. The students in this competition have dedicated many long hours to designing their vehicles and as you will see have proven themselves to be among the best and the brightest in North America.

Second, I would like to thank the competition's sponsors who have shown that successful partnerships can be made between government, industry, and academia. It is with the help of our sponsors that these students are able to gain this valuable hands-on experience. Without our sponsors this competition could not achieve the goals of reengineering a real-world vehicle that consumers can see themselves driving.

And finally, I would like to thank this year's judges, all of whom have volunteered their time and expertise towards making this competition a more genuine experience. Thank

you for being mentors and for continuing to make the Department's student competitions successful and relevant.

As new automotive technology gets attention in the consumer market, it is also gaining political attention. President Obama recently announced $2.4 billion in funding as part of the American Recovery and Reinvestment Act to encourage the production of next-generation plug-in hybrid electric vehicles and advanced battery components for such vehicles. The Act also includes a $7,500 incentive for buyers of these vehicles.

I am sure that everyone here is excited to see the fresh, new ideas that the students have come up with this year. From hardware-in-the-loop evaluations to outreach strategies and electric drive system design, this week each team will compete for 48 awards and cash prize money totalling more than $80,000. This year's 17-unique designs provide a glimpse into the automotive future with new and emerging technologies, such as plug-in hybrid, fuel cell hybrid, and full-function electric vehicles.

Good Luck to all of the teams and let the competition begin!

Remarks by Mr. John Haraf
Director of Hybrid Vehicle Integration and Controls
General Motors

On behalf of General Motors, I am excited to help kick off this week of competition for EcoCAR: *The Next Challenge* here in Toronto.

GM has a long history of working with the U.S. Department of Energy and the Government of Canada through Natural Resources Canada on vehicle engineering competitions similar to this one, however, I believe no competition before this has been more timely than what the EcoCAR competition is today.

Only three weeks ago in the United States, President Obama announced the establishment of a harmonized US national program to improve vehicle fuel economy and lower greenhouse gas emissions.

This was an historic announcement and one that will provide environmental and energy benefits as well as the certainty and consistency that automakers need to deliver great products.
Given that the auto industry is integrated across North America, we also appreciate the Canadian government's commitment to align their future vehicle greenhouse gas emissions with those of the United States.

The advanced technologies that each EcoCAR team is working on as part of this competition are exactly the types of technologies that will help us meet these new standards, so your hard work and innovation in this arena could not be more aptly timed.

For GM, propulsion technologies that enable greener mobility are even more important now than they have ever been – and they will continue to be so moving forward into the future.

A year ago when this competition officially launched, I couldn't have foreseen the new challenges that lay ahead for GM, the global auto industry, and the world economy as a whole.

As it has turned out, this competition finals event is taking place during one of the most historic times the North American auto industry has ever seen.

As you know, just one week ago General Motors Corporation announced it will complete its reinvention through the use of a court-supervised process in the U.S.
However, here in Canada, GM Canada's comprehensive restructuring plan was approved by the Canadian and Ontario Governments, and GM Canada is able to complete its restructuring without the need for a court-supervised process.

We are intensely focused on building a leaner, greener, more customer-focused and more cost-competitive company.

Today, a “New GM” is being built upon the strongest parts of our business, and the development of advanced, green vehicle technologies is absolutely core to our future success.

Over the course of the next two to three months as we move through this process, GM will continue to operate and sell cars and trucks. And upon emergence as a new organization, the future for GM is very bright.

In fact, this EcoCAR competition perfectly embodies the spirit and innovation that will drive the “New GM” forward as an organization.

The collaboration across industry, government and academia that is at the heart of this competition is exactly illustrative of the kinds of initiatives GM will continue to be involved with in the future to help develop solutions to the energy and environment issues society faces around the globe today.

Advanced technology is extremely important in addressing these issues, and at GM we will renew our commitments to greener vehicles and operations as our reinvention continues.

Our strategy is to work on all of the potential pathways to achieve energy competition and choice. We don’t think there’s one perfect solution that resolves all of the challenges consumers face around the globe – this idea is mirrored in this EcoCAR competition as you all are attempting to develop and build different technologies that use varied energy sources.

Currently, GM’s advanced technology efforts focus primarily on fuel efficiency, bio-fuels and vehicle electrification.

On the fuel efficiency front, we have made great strides to improve the efficiency of the internal combustion engine because right now this is still what powers most vehicles on the road today and we have a responsibility to make this technology as clean and efficient as possible.
The use of technologies like Active Fuel Management, six-speed transmissions, and variable valve timing has made this possible.

You can see some examples of our progress on the floor of the trade show exhibit here during the competition where the Canadian-built 2010 Chevrolet Equinox and 2010 Chevrolet Camaro are on display.

The Equinox compact crossover will achieve the best highway fuel economy in its segment – 6.1L / 100 km (32 mpg) – when it goes on sale this month.

And the Camaro, with a direct-injected V6, gets 6.8L / 100 km (29 mpg) on the highway – great efficiency for a classic, but reinvented, sports car.

In the area of biofuels, GM believes cellulosic ethanol - which is made from non-grain materials like switchgrass, forest and farm residue, and even trash – will offer the greatest potential in the short run to displace petroleum as a transportation energy source.

We have built upon our extensive biofuel experience from our operations in Brazil and have been at the forefront in developing flexible fuel vehicles that can operate using a blend of ethanol and gasoline.

Globally, GM has produced more than five million Flex-Fuel vehicles to date.

Finally, we are placing a lot of our emphasis on electric vehicles like hybrids, plug-in hybrids, extended range electric vehicles like the Chevy Volt, and vehicles powered by hydrogen fuel cells.

We've already got several hybrid vehicles in the marketplace today, but the GM car that gets most of the attention is the Chevy Volt. I'm sure all of you engineering students have heard of it.

This vehicle is a quantum leap. It has become the industry's "poster child" for the reinvention of the automobile and we will begin producing the Chevy Volt in November of 2010.

The Volt will allow a driver to travel up to 65Km (40 miles) on gas-free electric power alone.

After that, the engine kicks on to generate electricity, allowing for several hundred additional kilometers and miles of electric driving.

Looking beyond extended-range electric vehicles like the Volt, GM also sees promise in hydrogen fuel-cell electric vehicles.

For the past 18 months, GM has conducted the world's largest fuel cell test drive program – an initiative called Project Driveway.

We put more than 100 fuel-cell powered Chevy Equinoxes in the hands of more than 3,400 regular customers. These people have driven more than a half-million miles with zero petroleum, leaving a carbon footprint of zero.

These 100 fuel –cell powered Chevy Equinoxes were built here in Canada at the GM Engineering Centre in Oshawa and we will be demonstrating a number of these vehicles during the upcoming 2010 Winter Olympic games in Vancouver.

As we continue our development of electrically-driven vehicles, we are increasing our investment in lithium-ion battery technology because this is key to the advancement of these vehicles. In fact, this is the battery behind the Volt.

At the beginning of this year, GM also announced that we will be the first major automaker to establish a lithium-ion battery pack manufacturing facility in the U.S. The battery packs for the Volt will be assembled at this new facility.

And the Volt itself will be built in Detroit.

To help spur development of batteries, we have also announced that the world's largest advanced battery testing facility will be located in Warren, Michigan, at our technical center campus located there. In fact, just this morning, GM CEO Fritz Henderson hosted media, policy-makers and other special guests for the first official tour of this new facility.

There is obviously a lot happening in the world of automotive technology right now, and at GM we welcome collaboration and partnership that will help to advance the industry.

To conclude, like I stated earlier, I am very pleased to help kick-off this week's competition activities.

I know we are all looking forward to seeing your creativity and innovation in the propulsion system designs each team has created.

At GM, we are in a time of transformation where we are working to reinvent the automobile and our company.

This is an extraordinary time to be working in automotive engineering, and as the next generation of engineers, you all have an amazing opportunity to make a profound impact on the technologies that will someday be used around the globe to drive future automobiles.

That's a big challenge – but as we know at GM – with challenge comes great opportunity. I encourage all of you to seize that opportunity and I wish you good luck during this week's competition!

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