CANADA'S ACTION PLAN FOR CLEAN ON-ROAD TRANSPORTATION

Government of Canada
Gouvernement du Canada

Canada

Cette publication est aussi disponible en français sous le titre *Plan d'action du Canada pour un transport routier propre*.

TP 15406E
Catalogue No. T42-30/2022E-PDF
ISBN 978-0-660-46758-0

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EXECUTIVE SUMMARY

Significantly reducing emissions from on-road vehicles is key to achieve net-zero emissions by 2050.

Switching to zero-emission vehicles (vehicles that can operate with no tailpipe emissions, including battery electric, plug-in hybrid electric, and fuel cell electric vehicles) will put Canada's transportation emissions on a downwards trajectory.

This action plan reflects the Government of Canada's initiatives announced and implemented since 2016 to show how these measures are working together to help Canadians and Canadians businesses make the switch to zero-emission vehicles.

The Government of Canada is taking a comprehensive approach to support this transition by making significant investments in purchase incentives and charging stations. These investments will be coupled with a light-duty zero-emission vehicle sales regulation, which will set annually increasing requirements towards achieving 100% new light-duty zero-emission vehicle sales by 2035, including mandatory interim targets of at least 20% of all new light-duty vehicles offered for sale by 2026 and at least 60% by 2030.

To reduce emissions from medium- and heavy-duty vehicles, the Government of Canada will aim to reach 35% of total new medium- and heavy-duty vehicle sales being zero-emission vehicles by 2030. In addition, the Government will develop a medium- and heavy-duty zero-emission vehicle regulation to require 100% of new medium- and heavy-duty vehicle sales to be zero-emission vehicles by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility, and explore interim targets for the mid-2020s.

A focus on new vehicle sales, however, means that it will take over a decade for zero-emission vehicles to replace most vehicles on the road. Therefore, the government is also working to ensure gas and diesel vehicles already on our roads are operating as cleanly as possible. This includes initiatives to retrofit older trucks with more fuel-efficient technologies and increasing the availability of cleaner fuels.

The transition to a cleaner transportation system also represents a significant economic opportunity for the country. With its critical minerals, skilled workforce, advanced manufacturing, and low-emitting electricity grid, the Government of Canada is taking steps to cultivate a business environment where Canada is a destination of choice for investments in zero-emission vehicle manufacturing and battery value chains. This includes significant investments through the government's Strategic Innovation Fund and reducing taxes for businesses that manufacture zero-emission technologies.

As with confronting the climate change crisis more broadly, a cleaner on-road transportation requires continued collaboration with other governments, both within and outside of Canada, as well as with automakers and other private sector partners. The government will continue to engage provinces and territories, and strengthen ties to local and regional governments, to work together to overcome barriers to greater adoption of zero-emission vehicles. The government will also strengthen efforts to consult industry, non-governmental organizations, and academia, to ensure continued progress is made towards Canada's ambitious zero-emission vehicle sales targets. At the same time, Canada will continue to build and enhance international alliances to maintain and build global momentum towards zero-emission vehicles.

Supporting Indigenous-led opportunities to adopt zero-emission vehicles and clean fuels is important and doing so will allow Indigenous organizations and communities to develop programming that is specific to their needs. More work also lies ahead to make sure that that zero-emission vehicles are accessible to all Canadians, as this will be key to Canada's goals of achieving net zero emissions by 2050. There will also be critical roles to play for active transportation and public transit in reducing emissions from on-road vehicles.

The shift towards low- and zero-emission vehicles needs to be considered as part of a broader energy system transition, including improvements to our electrical grids to accommodate increased demand and innovations in urban planning and design.

Given the pace of change we are now witnessing in the transportation sector, the government's approach to zero-emission vehicles will evolve over time. The Government of Canada's future actions for cleaner on-road transportation will be detailed through the progress reports required under the Canadian Net-Zero Emissions Accountability Act, the first of which is set for 2023.

CONFRONTING THE CLIMATE CHANGE EMERGENCY

As stated in the *Canadian Net-Zero Emissions Accountability Act*, Canada's 2030 nationally determined contribution under the Paris Agreement is to reduce emissions by 40 to 45% below 2005 levels. This legislation also confirmed Canada's commitment to set national targets for reducing emissions every 5 years, with the goal of attaining net-zero emissions by 2050.

The transportation sector is responsible for around 25% of Canada's annual greenhouse gas emissions, making it the second-largest contributing sector to Canada's overall emissions. Most emissions come from on-road transportation, which includes light-duty vehicles (like cars, sport-utility vehicles, and pickup trucks) and medium- and heavy-duty vehicles (like larger pickup trucks, cargo vans, buses, and freight trucks).

"Decarbonizing" means reducing carbon emissions by using zero-carbon power sources. To meet Canada's climate change targets, we need to decarbonize on-road transportation through a broad approach.

While active transportation and greater use of public transit will play a critical role in decreasing emissions from the on-road sector by taking vehicles off the road and reducing vehicle trips with few occupants, these efforts must be done in tandem with switching to zero-emission vehicles, which offers significant potential to decarbonize on-road transportation and realize a net-zero future.

The government's comprehensive strategy on zero-emission vehicles includes taking actions to overcome key barriers to higher adoption, such as the higher purchase price of these vehicles compared with internal combustion engine vehicles and limited access to charging and refuelling stations, and to support industry through this transition. Importantly, we have taken actions that are designed to complement one another. For example, providing purchase incentives helps to close the purchase price gap, while also easing the transition towards regulated sales requirements by increasing demand for zero-emission vehicles. Likewise, we are investing in charging and refuelling stations and taking steps to help provinces and electric utilities to enable our electricity networks to be ready for increased demand from the adoption of zero-emission vehicles.

A successful transition to zero-emission vehicles will equally depend on actions taken by other levels of government, such as provinces, territories, and municipalities, as well as those by the private sector. Within Canada, several jurisdictions are implementing their own comprehensive strategies to make the switch to zero-emission vehicles, all of which complement federal actions. Likewise, vehicle and part manufacturers, including those in Canada, have risen to the challenge by spending hundreds of billions of dollars to develop and research new products, and on capital investments to increase zero-emission vehicle production.

In addition to combatting climate change, the switch to zero-emission vehicles can help to reduce air pollution from on-road vehicles. According to Health Canada, 10 million people in Canada (almost one third of all Canadians) live within 500 meters of highways or 100 meters of major urban roads with higher exposure to traffic-related air pollution. Health Canada estimates the health impact costs of traffic-related air pollution at $9.5 billion per year (in 2015 currency), and results in 1,200 premature deaths a year in Canada.

While the switch to zero-emission vehicles across all classes of vehicles will take time, low-carbon fuels, like renewable diesel and ethanol, will play a role in decarbonizing today's internal combustion engine vehicles. In some areas, like long-distance trucking, until new technologies and fuels of the future are scaled up, the primary fuel source will continue to be diesel fuel or low carbon intensive bio-derived diesel fuels. Canada's recently published Clean Fuel Regulations send a market signal for increased supply of low carbon intensity liquid fuels and zero-emission technologies by allowing producers to create and sell credits, driving innovation in the fuels sector and creating new economic opportunities for clean fuel producers in Canada.

CANADA'S ZERO-EMISSION VEHICLE SALES TARGETS

The 2030 Emissions Reduction Plan set out new federal sales targets and requirements for new zero-emission vehicles and committed to:

- develop a light-duty zero-emission vehicle sales regulation, which will set annually increasing requirements towards achieving 100% new light-duty zero-emission vehicles sales by 2035, including mandatory interim targets of at least 20% of all new light-duty vehicles offered for sale by 2026 and at least 60% by 2030
- aim to reach 35% of total new medium- and heavy-duty vehicle sales being zero-emission vehicles by 2030. In addition, the Government will develop a medium- and heavy-duty zero-emission vehicle regulation to require 100% of new medium- and heavy-duty vehicle sales to be zero-emission vehicles by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility, and explore interim targets for the mid-2020s

According to projections, steady annual progress towards these targets should result in:

- around 395,000 new light-duty zero-emission vehicle sales in 2026, 1.2 million zero-emission vehicle sales in 2030, and 2.0 million zero-emission vehicle sales in 2035
- about 1.4 million light-duty zero-emission vehicles on the road by 2026, 4.6 million on the road by 2030, and 12.4 million on the road by 2035
- around 39,000 new medium- and heavy-duty zero-emission vehicle sales in 2030

Meeting these ambitious targets is key to reaching our goal of net-zero emissions by 2050 and will require a concerted effort by governments working closely with industry, utilities, experts, and non-governmental organizations, and responding to feedback from individual Canadians. But Canadians and Canadian businesses face many barriers to using zero-emission vehicles. Overcoming these challenges will be key to meeting our zero-emission vehicle sale targets.

Make sure zero-emission vehicles are available. Many Canadians and businesses who want to buy a zero-emission vehicle face limited availability at dealerships or long wait times. Others simply can't find a model that suits their needs. Zero-emission vehicle inventory across Canada is also uneven as jurisdictions with incentive programs and zero-emission vehicle sale regulations are prioritized over others for the limited supply of zero-emission vehicles. Disruptions in manufacturing supply chains, including semiconductor and critical mineral shortages, further complicate the current supply situation.

Make zero-emission vehicles more affordable. Zero-emission vehicles have higher purchase prices than comparable internal combustion engine vehicles. On top of short-term inflation, high demand for the minerals used to build batteries has increased costs. Despite lower operating and maintenance costs, incentives will be key in offsetting the upfront cost differences between zero-emission vehicles and gas or diesel vehicles.

Build charging and refuelling stations. Canadians want to know that they will be able to get where they need to go, and charge or refuel their zero-emission vehicle in a way that fits their lifestyle or business needs. Uncertainty about adequate access to charging and refuelling stations, their reliability and ease of use, has been a concern for some potential buyers.

Build public awareness and confidence in zero-emission vehicles. Canadians still don't know much about zero-emission vehicles and have limited exposure to them. Awareness, training and education programs aimed at seeing and experiencing these technologies in action will help consumers discover the benefits of adopting these vehicles.

Support research, development, and demonstration (RD&D). Despite significant technological progress in recent years, there's more work to do to accelerate innovative technologies to support the commercialization and uptake of zero-emission vehicles across most vehicle segments, particularly medium- and heavy-duty vehicles.

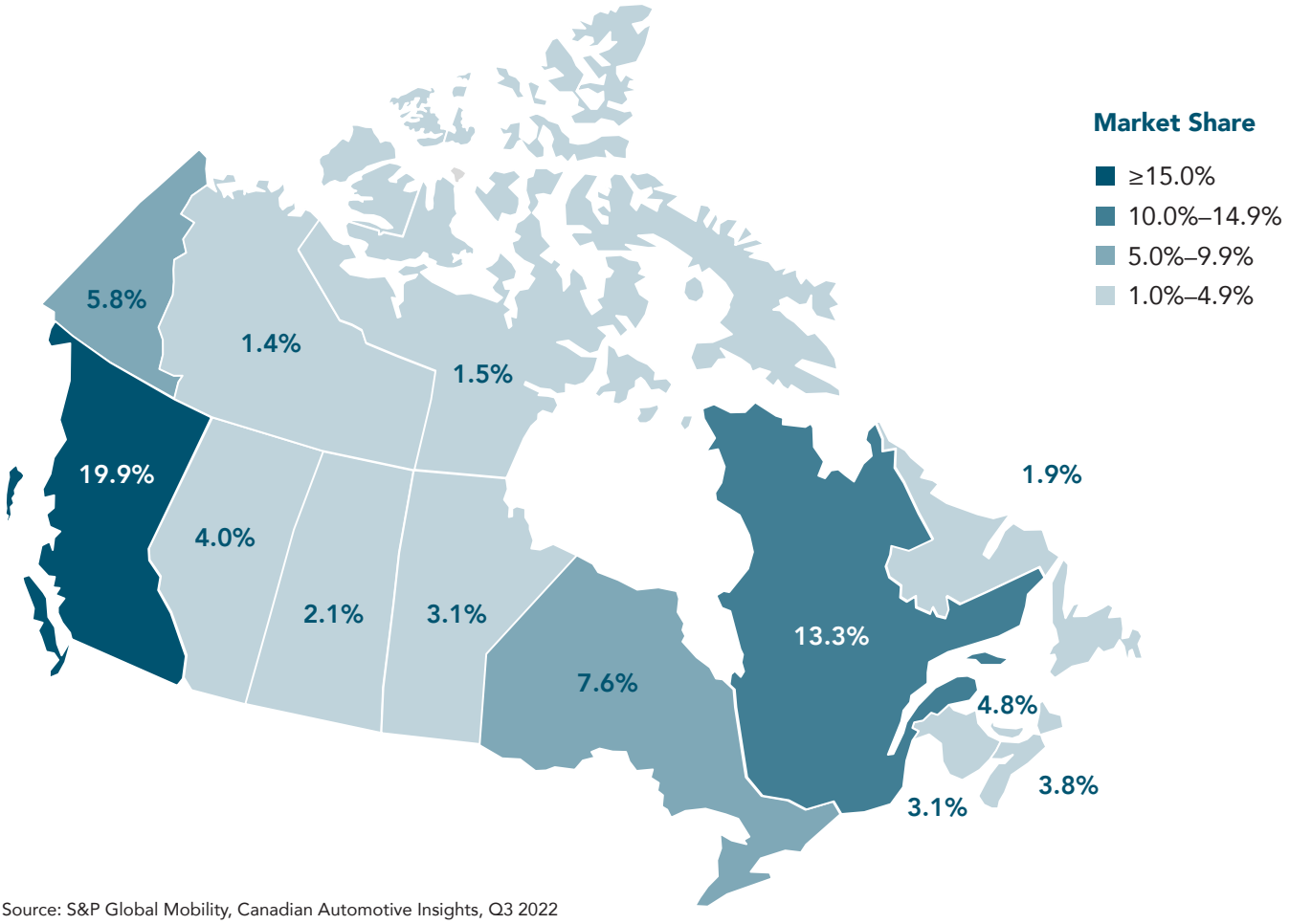
Lead by example. The Government of Canada continues to build a cleaner on-road transportation system while influencing others to follow suit through green procurement.

Act on clean growth opportunities. Making investments to support a vehicle manufacturing sector in Canada that is innovative and competitive, while also protecting jobs as the automotive sector transitions.

We know that taking actions in each of these areas is key to many Canadians switching to zero-emission vehicles. That's why the Government of Canada is investing several billions of dollars to help accelerate the zero-emission vehicle transition, and these investments are achieving results. Canada's zero-emission vehicle market share is increasing.

According to S&P Global Mobility, light-duty zero-emission vehicle market share in the first half of 2022 reached 7.9%, up from 5.6% in 2021, 3.8% in 2020, and 3.1% in 2019. As shown in the graphic below, uptake of zero-emission vehicles across Canada varies significantly by jurisdiction.

LIGHT-DUTY ZERO-EMISSION VEHICLE MARKET SHARE – THIRD QUARTER OF 2022



Source: S&P Global Mobility, Canadian Automotive Insights, Q3 2022

Similar shifts are happening in countries with bigger populations, like the United States and European Union, which also have more influence to shift automotive investments and production plans. We're also working alongside a growing global coalition of like-minded jurisdictions that have set 100% zero-emission vehicle targets for light-duty vehicles and medium- and heavy-duty vehicles.

MAKING SURE ZERO-EMISSION VEHICLES ARE AVAILABLE

Since 2011, the Government of Canada has had vehicle greenhouse gas emission standards that are aligned with those in the U.S. and require automakers to make annual improvements to their vehicle fleets to reduce greenhouse gas emissions.

Under our 2020 climate plan (A healthy environment and healthy economy), we committed to aligning Canada's light-duty vehicle regulations with the most stringent performance standards in North America post-2025, whether at the U.S. federal or state level. Presently, the U.S. government has the most ambitious greenhouse gas standards for vehicle model years up to 2026 and intends to pursue the most ambitious greenhouse gas standards for light-duty vehicle fleets for model years 2027 and beyond. Canada intends to align with the final standards, which are expected to be released by July 2024.

To be on a credible path to meet our zero-emission vehicle sale targets and to ensure that Canada receives a growing share of global zero-emission vehicles, the Government of Canada committed to complement these greenhouse gas standards with a zero-emission vehicle sales regulation.

The 2030 Emissions Reduction Plan announced that the government is developing a light-duty zero-emission vehicle sales regulation, which will set annually increasing requirements towards achieving 100% light-duty zero-emission vehicle sales by 2035, including mandatory targets of at least 20% of all new light-duty vehicle sales by 2026 and at least 60% by 2030.

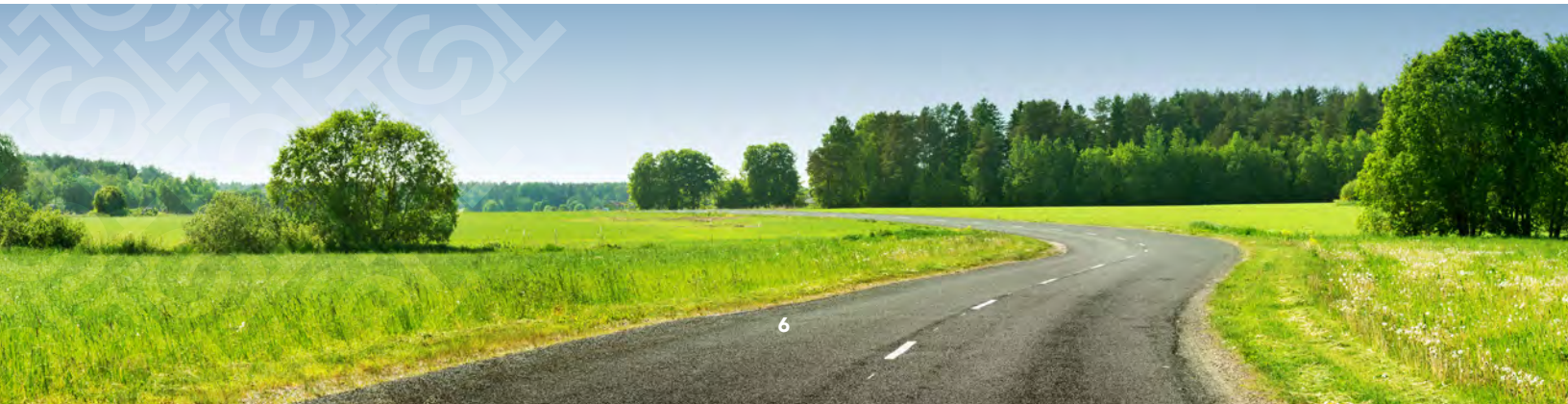
Zero-emission vehicle regulations require automakers to supply an increasing share of vehicles for sale in jurisdictions that have adopted them. Automakers will be able to comply via earning credits through the sale of zero-emission vehicles and flexibilities, such as purchasing credits from other automakers.

Zero-emission vehicle sales regulations are growing in popularity. Within Canada, zero-emission vehicle regulations are already in place in Québec and British Columbia, which represent roughly 35% of the nation's new light-duty vehicle market. California has had a zero-emission vehicle regulation in place since 1990, and several U.S. states representing roughly 40% of the U.S.'s new light-duty vehicle market have adopted California's rules. The Government of Canada is working with California, Québec, and British Columbia to align Canada's regulations as much as possible since this benefits both citizens and industry. The government is aiming to have draft regulations released by the end of 2022, allowing for feedback from Canadians and stakeholders in 2023.

Canada also has greenhouse gas emission standards for medium- and heavy-duty vehicles, which have historically been aligned with those from the United States. The U.S. government is finalizing 2 new rules:

- the first will apply to model year 2027 to 2030
- the second rule would set stricter greenhouse gas standards for model year 2030 vehicles and beyond, and is expected to be finalized around July 2024

Like light-duty vehicles, the government has committed to develop medium- and heavy-duty zero-emission vehicle regulations. The Government of Canada will aim to reach 35% of total new medium- and heavy-duty vehicle sales being zero-emission vehicles by 2030. In addition, the Government will develop a medium- and heavy-duty zero-emission vehicle regulation to require 100% of new medium- and heavy-duty vehicle sales to be zero-emission vehicles by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility, and explore interim targets for the mid-2020s.



Memorandum of Cooperation between Canada and California on Climate Action and Nature Protection

In June 2022, Canada and California launched a memorandum of cooperation, which will help to deliver clean air and water, good jobs, and healthy communities for both Canadians and Californians.

Both jurisdictions have committed to requiring all new light-duty vehicles sales to be zero-emission by 2035 and are taking steps to transition medium- and heavy-duty sectors to zero emissions. The partnership calls for Canada and California to work together to decarbonize on-road transportation. This includes sharing information and best practices on developing regulations, policies and programs, and administering zero-emission vehicle targets and incentive programs for on- and off-road vehicles.

While regulations will form the backbone of Canada's strategy to increase zero-emission vehicle availability, other actions are required. The government included major investments in Budget 2022 to complement these forthcoming regulations by continuing measures to increase consumer demand for zero-emission vehicles. Budget 2022 invested over $3 billion in measures aimed to speed up the switch to zero-emission vehicles in Canada. This is in addition to $1 billion already invested prior to 2022.

MAKING ZERO-EMISSION VEHICLES MORE AFFORDABLE

PROVIDING PURCHASE INCENTIVES

Budget 2022 investments included an additional $1.7 billion for purchase incentives of up to $5,000 for eligible light-duty zero-emission vehicles through the Incentives for Zero-Emission Vehicles Program, which will now be funded until March 2025.

Recognizing that larger zero-emission vehicles cost more, we also expanded our vehicle price caps to capture larger zero-emission vehicle models, like sport-utility vehicles and pickup trucks, as part of the program's renewal.

Key numbers from the Incentives for Zero-Emission Vehicles Program

$2.3B allocated in total

37 eligible models as of October 2022

Over **171,000** participants as of October 2022

Following incentive programs in Québec and British Columbia, several provinces and territories have implemented their own incentive programs to complement the program since its launch in 2019. Multiple purchase incentives help spread financial burden across different levels of government and further close the purchase price gap between zero-emission vehicles and internal combustion engine vehicles.

All federal, provincial, and territorial incentives for light-duty zero-emission vehicles (as of October 2022)

Québec – Up to $12,000

Yukon – Up to $10,000

Northwest Territories* - Up to $10,000

New Brunswick – Up to $10,000

Prince Edward Island – Up to $10,000

Nova Scotia – Up to $8,000

British Columbia – Up to $8,000

Newfoundland and Labrador – Up to $7,500

*Funding for Northwest Territories program is determined on an annual basis

Budget 2022 also invested $547.5 million to provide purchase incentives to encourage Canadian businesses to adopt medium- and heavy-duty zero-emission vehicles. Launched in July 2022, the Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles Program provides incentives of up to $200,000 for eligible vehicles.

Key numbers from the Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles Program

$547.5M allocated in total

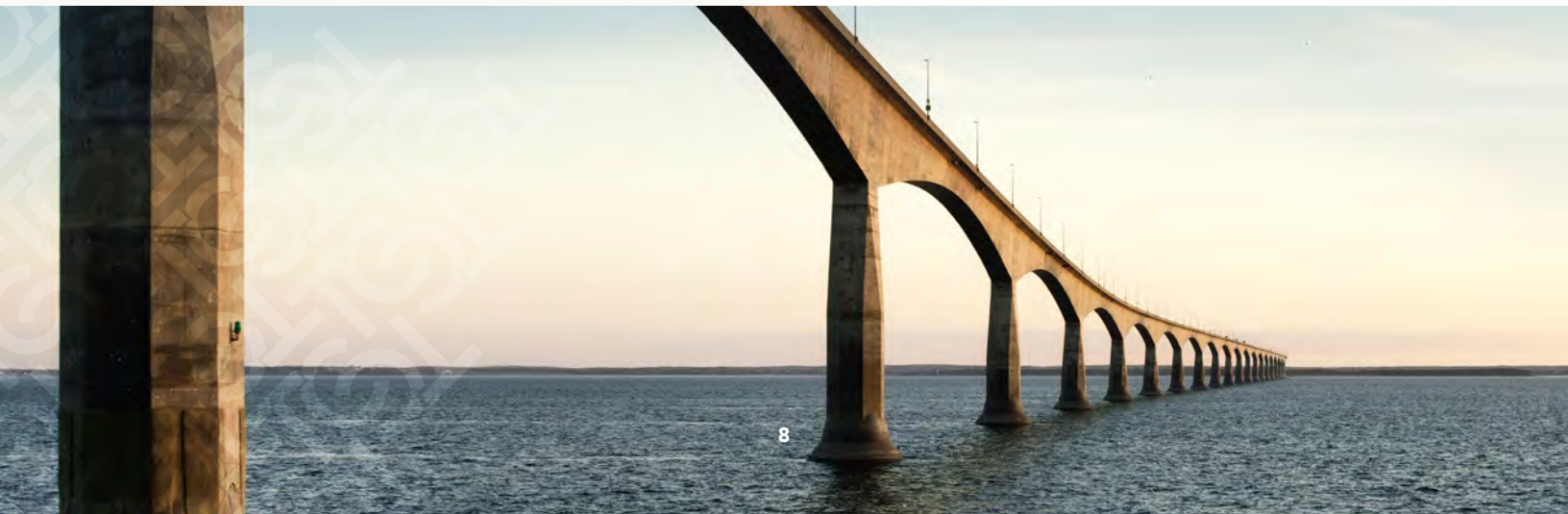
40 eligible models from 14 different manufacturers

Over **$2,870,000** in funding requested from a total of **37** participants to date

Like light-duty vehicles, federal purchase incentives can be combined with provincial and territorial incentives, including up to $175,000 in Quebec and up to $100,000 in British Columbia, up to a limit.

We've also been supporting zero-emission vehicles use by offering businesses a temporary first-year tax write-off for new and used light-, medium- and heavy-duty vehicles. Businesses that receive an incentive from the federal incentive program can't also benefit from the temporary tax write-off for zero-emission vehicles.

Launched in 2021 as a part of new investments in public transit, the Zero Emission Transit Fund is a $2.75 billion program that's helping transit agencies and school bus operators plan for and buy zero-emission buses and related infrastructure. The fund works in coordination with the Canada Infrastructure Bank's Zero-Emission Bus Initiative that provides flexible financing solutions that leverage lifecycle operational cost savings to help offset higher upfront costs. Before this fund, the Government of Canada's programs helped support the purchase of over 550 zero-emission transit and school buses.



BUILDING CHARGING AND REFUELLING STATIONS

INFRASTRUCTURE FOR LIGHT-DUTY ZERO-EMISSION VEHICLES

With more zero-emission vehicles on the road, comes the need for more infrastructure. To meet our targets, we will continue to support the development of zero-emission vehicle infrastructure across Canada, in a strategic, targeted way. Building these stations not only ensures Canadians can access them, but also offers good business opportunities in the infrastructure, technology, and utilities sectors.

Prior to Budget 2022, the government allocated $376 million to make chargers and refuelling stations more accessible for Canadians, prioritizing installing chargers along Canada's National Highway System as well as where Canadians live, work and play. Projects chosen for funding thus far will support the installation of over 35,000 chargers across Canada, with many more to come.

To support our goal of adding 50,000 more new zero-emission vehicle chargers to Canada's network, Budget 2022 also provides an additional $400 million to Natural Resources Canada for deploying zero-emission vehicle infrastructure.

Canada's Infrastructure Bank will also invest $500 million into large-scale zero-emission vehicle charging and refuelling infrastructure that is revenue generating and in the public interest.

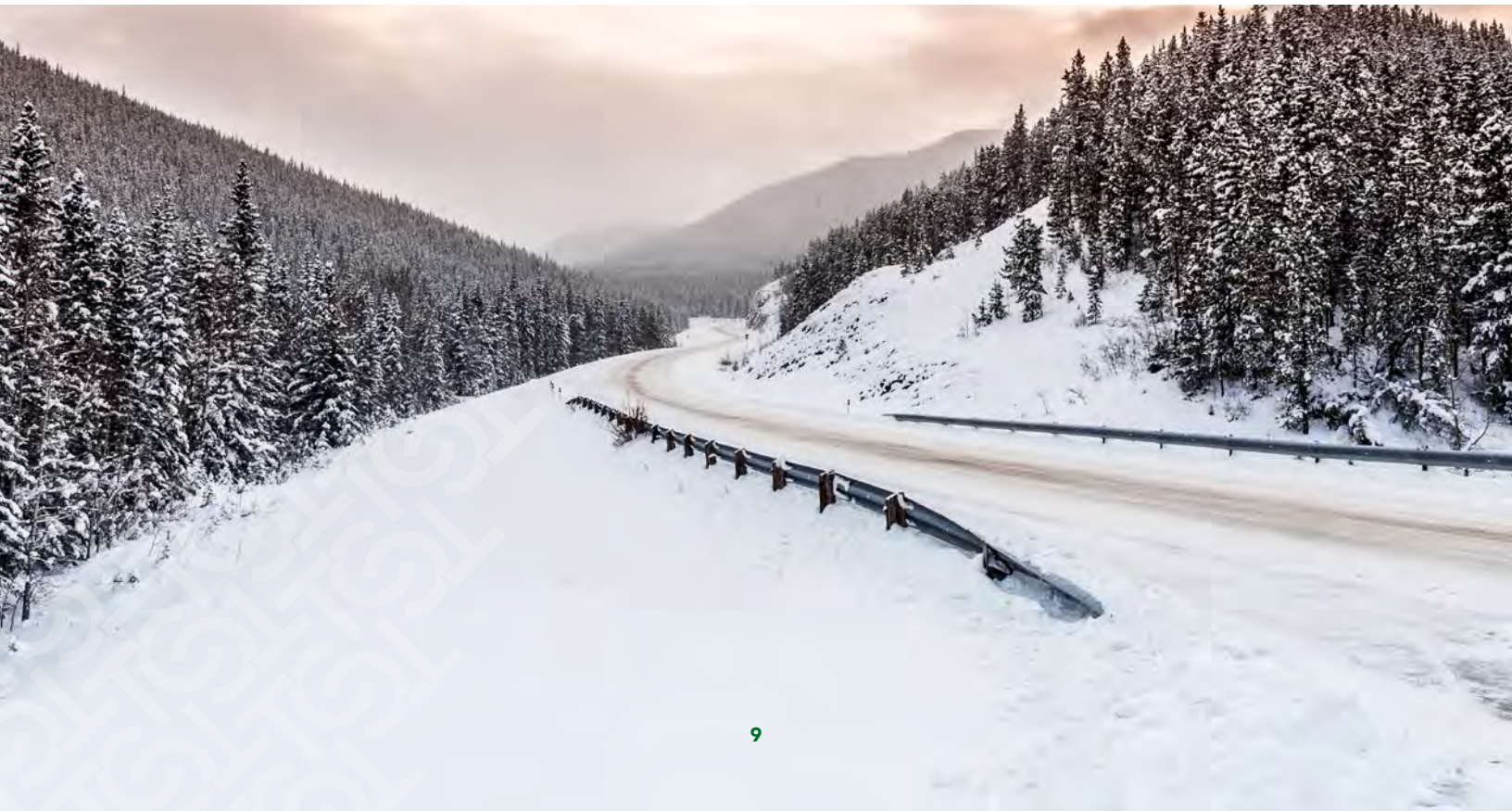
The private sector's response to these investments has been encouraging. For example, for every federal dollar spent in the government's Zero-Emission Vehicle Infrastructure Program, the private sector has contributed over twice as much.

Key numbers on zero-emission vehicle infrastructure

Projects chosen for funding will build over **35,000** charging and **25** hydrogen refuelling stations to be completed by 2026

$900M in new funding to support an additional **50,000** charging and refuelling stations to be completed by 2029

Total funding of **$1.2B** to support over **85,000** charging and refuelling stations



In addition to direct funding for zero-emission vehicle charging and refuelling stations, we're offering businesses a temporary first-year tax write-off for investments in electric vehicle charging stations and hydrogen refuelling stations.

We recognize that meeting our light-duty zero-emission vehicle sales targets will require even more charging stations. According to an analysis prepared by Dunsky Energy Consulting, meeting Canada's targets will require a substantial increase in the deployment of publicly accessible charging stations. Our investments in 84,500 chargers will help establish a business case for the private sector to increase its funding for Canada's electric vehicle charging network on route to reaching the scale outlined in the report, namely, 442,000–469,000 publicly available chargers by 2035.

While all levels of government will continue to play a role in building charging and refuelling stations, success will depend on investments from other public and private partners to meet our future needs, including utilities, businesses, and industry. We're committed to continue working with industry to dive deeper into the charging and refuelling station requirements at a regional or provincial/territorial level with further analyses and studies.

INFRASTRUCTURE FOR MEDIUM- AND HEAVY-DUTY ZERO-EMISSION VEHICLES

Zero-emission technologies for medium- and heavy-duty vehicles are less commercially ready than for light-duty vehicles and significant barriers exist that could slow adoption, including inadequate charging and refuelling infrastructure in both private and public settings. Although there is the feasibility, and need, for infrastructure that can serve both light-duty vehicles and medium- and heavy-duty vehicles, given Canada's targets to reach 100% zero-emission medium- and heavy-duty vehicles by 2040 (where feasible), additional attention and investments will be required. For example, the government's investments in hydrogen refuelling stations will help support the introduction of medium- and heavy-duty hydrogen vehicles. Commercial fleets need to know that these vehicles can meet their needs and that they will be able to charge and refuel where and when their operation requires it.

Given the bigger energy requirements and diversity of use for medium- and heavy-duty vehicles, we will need to use targeted approaches to support companies as they transition to zero-emission technologies. Charging infrastructure to support the medium- and heavy-duty vehicles sector must be configured to enable and allow trucks to have physical access to charging sites, while also making sure the sites can support the high-powered charging technologies required.

To-date, federal infrastructure investments have mostly focused on light-duty vehicles. As technologies for medium- and heavy-duty zero-emission vehicles evolve, we're providing more federal support for medium- and heavy-duty zero-emission vehicles charging and refuelling infrastructure. For example, we've launched a targeted request for proposals for commercial fleets under the Zero-Emission Infrastructure Program. The Canada Infrastructure Bank is also investing $500M in large-scale zero-emission vehicle charging and refuelling that is revenue generating and in the public interest. These investments are paving the way for charging and refuelling infrastructure for medium-duty zero-emission vehicles in Canada, however, more dedicated efforts will still be needed.

BUILDING PUBLIC AWARENESS AND CONFIDENCE IN ZERO-EMISSION VEHICLES

Nationwide surveys have repeatedly shown the importance of ensuring Canadians have more information made available to them to learn about the benefits of zero-emission vehicles. Canadians strongly believe that these vehicles benefit the environment, but some feel they're expensive and hard to fuel/charge.

Canadians also have limited experience with zero-emission vehicles, and little understanding of the reality of owning and driving these vehicles, including how they perform and how to charge and maintain them.

Awareness, education, and training can have a direct, positive impact on the switch to zero-emission vehicles, helping Canadians better understand their environmental and cost-saving benefits. According to Plug N' Drive, 80% of people who have visited its Electric Vehicle Discovery Centre in Toronto are more likely to buy a zero-emission vehicle, with over 30% of visitors that have bought one and over 60% of visitors planning to buy one in the next 1–2 years.

Likewise, business and fleet operators also have low awareness and understanding of the potential benefits of medium- and heavy-duty zero-emission vehicles. This is understandable as zero-emission vehicle options are just now entering the market. While short-haul vehicles are now more readily available, there are additional challenges that must be overcome for long-haul freight, like technology readiness.

To help address this barrier, we've launched the Zero-Emission Vehicle Awareness Initiative to support projects that increase awareness, knowledge, and public confidence in zero-emission vehicles as well as public charging and refuelling stations.

This program helps fund outreach, education, and capacity-building activities. Starting this year, the program offers 3 streams of funding:

- one for light-duty vehicles and micro-mobility solutions,
- the other for medium- and heavy-duty vehicles. This allows projects to be tailored to different audiences and through different means, and
- an open intake stream for Indigenous-led projects

The government is also taking steps to support industry-led projects to raise awareness and knowledge of clean fuels and clean fuel technologies.

Key zero-emission vehicle awareness figures

Since 2019, the Zero Emission Vehicle Awareness Initiative provided nearly $7 million in funding across 46 projects with many more to come. Examples of projects funded to date include:

- an online platform for engaging municipal practitioners in zero-emission vehicle deployment efforts
- an electric vehicle information and education portal for car dealerships
- an e-mobility awareness initiative
- a hydrogen vehicle demonstration project for heavy-duty vehicles
- a fleet electrification information portal
- a mobile networking application for the electric vehicle community
- an Indigenous electric vehicle ambassador project
- an electric vehicle buyer's guide, and
- an electric vehicle resource centre

Up to $26 million is being set aside through 2026–27 to support education and awareness projects for all on-road vehicles for both personal and commercial use, as well as for Indigenous-led awareness projects.

SUPPORT RESEARCH, DEVELOPMENT, AND DEMONSTRATION

The Government of Canada has a long history of supporting zero-emission vehicle RD&D in key areas including batteries, hydrogen and fuel cells, electric motors, and charging and refuelling infrastructure.

Recent investments include the $76M Electric Vehicle Infrastructure Demonstration Program to support technology demonstrations of next-generation, innovative charging and hydrogen refuelling infrastructure. This program has funding over 30 projects across Canada. These include, for example, charging and hydrogen refuelling solutions in workplaces, remote locations, cold climates, and the urban environment, as well as vehicle-to-grid applications. Other projects include infrastructure demonstrations for zero-emission buses and heavy-duty vehicles.

Additional investments through the Clean Growth Program and Breakthrough Energy Solutions Canada are supporting projects that target ultra-fast charging, electric powertrain technologies, and the electrification of heavy-duty vehicles in mining as well as forestry.

Significant emission reductions in the hard-to-abate sectors, like heavy-trucks, require a massive scale up of the required technologies over the next decade as these are largely at the prototype and demonstration stages. Innovation can be used to help make zero-emission vehicles more affordable to Canadians, in combination with other fiscal tools in the short to mid-term.

Complementary measures

The Clean Fuel Regulations increase incentives for developing and using clean fuels (like hydrogen), technologies, and processes. They also require domestic producers and importers of liquid fossil fuels including gasoline and diesel to gradually reduce the carbon intensity of the fuels they sell in Canada. The regulations will support the use of electric vehicles by allowing charging network operators to earn credits for residential and public electric vehicle charging and charging site hosts can earn credits for private or commercial charging.

Federal carbon pricing adds a charge to the purchase of gasoline and diesel fuels, which will provide an increasingly powerful market signal to Canadians to make the switch to cleaner modes of transportation, including zero-emission vehicles.

To offset the federal carbon price in provinces and territories where it applies, households receive a quarterly Climate Action Incentive Payment. Canadians that make the switch to a zero-emission vehicle stand to benefit more than those that drive a vehicle with an internal combustion engine.

The Clean Electricity Regulations will ensure that Canada's electrical grid become net-zero by 2035 while also making sure that Canadians can still access reliable and affordable electricity. These regulations complement the government's efforts to speed-up the use of zero-emission vehicles by making sure Canadians will be charging their electric vehicles from cleaner electricity.

LEAD BY EXAMPLE

Consistent with the United Nations' 2030 Agenda for Sustainable Development and the Federal Sustainable Development Strategy, the Greening Government Strategy sets ambitious targets for the federal fleet, including adopting low-carbon mobility solutions, deploying supporting infrastructure in government facilities, and modernizing operations.

The strategy calls for at least 75% of new light-duty fleet vehicle purchases to be zero-emission vehicles or hybrid electric vehicles. The government also accelerated its light-duty zero-emission vehicle fleet target from 80% to 100% by 2030.

The government is supporting this target by undertaking electric vehicle suitability assessments via telematic devices and electric vehicle readiness assessments at federal buildings.

We have also created several working groups and subcommittees to mobilize the federal fleet community and identify challenges and opportunities around topics like zero-emission vehicles, charging infrastructure, and policy and finance.

On the pathway to net-zero, we're also committed to reducing emissions from the federal national safety and security fleet while providing Canada with effective operational capability.

ACTING ON CLEAN GROWTH OPPORTUNITIES

The global transition to zero-emission vehicles is now firmly underway, and with it comes major opportunities for clean economic growth and to promote our companies and technologies.

The Canadian Climate Institute has identified Canada's low carbon transportation sector as one that offers massive market growth potential, and the policies put in place today are essential to realizing future economic benefits. While investments in electric vehicle manufacturing and battery value chains in Canada could help to boost local availability of these cleaner vehicles, they are more important for supporting clean economic growth and contributing to the global transition to zero-emission vehicles.

The Government of Canada, together with provincial governments, will continue investment attraction efforts in Canada's vehicle manufacturing and battery value chains (from mining through to battery recycling) to ensure that Canada is positioned for success, remains competitive, and attracts new low and zero-emission vehicle production mandates via the Strategic Innovation Fund and other efforts.

THE STRATEGIC INNOVATION FUND

Our Strategic Innovation Fund supports large-scale, transformative, and collaborative projects that help promote the long-term competitiveness of Canadian industries, clean growth, and the advancement of Canada's strategic technological advantage.

Our $8 billion Net Zero Accelerator Initiative (which is part of the fund) invests in projects to support the green transformation of key industrial sectors, including Canada's automotive sector, as well as efforts that support the development of a Canadian battery and hydrogen ecosystem. The initiative will also support investments that will decarbonize medium- and heavy-duty transport via R&D, technology, manufacturing, vehicle assembly, and roll-out.

Recent investments by the Strategic Innovation Fund and Net Zero Accelerator

$529M for Stellantis to expand electric vehicle manufacturing at its Windsor and Brampton assembly plants

$295M for Ford's Oakville Assembly Facility to be retooled for battery-electric vehicle production

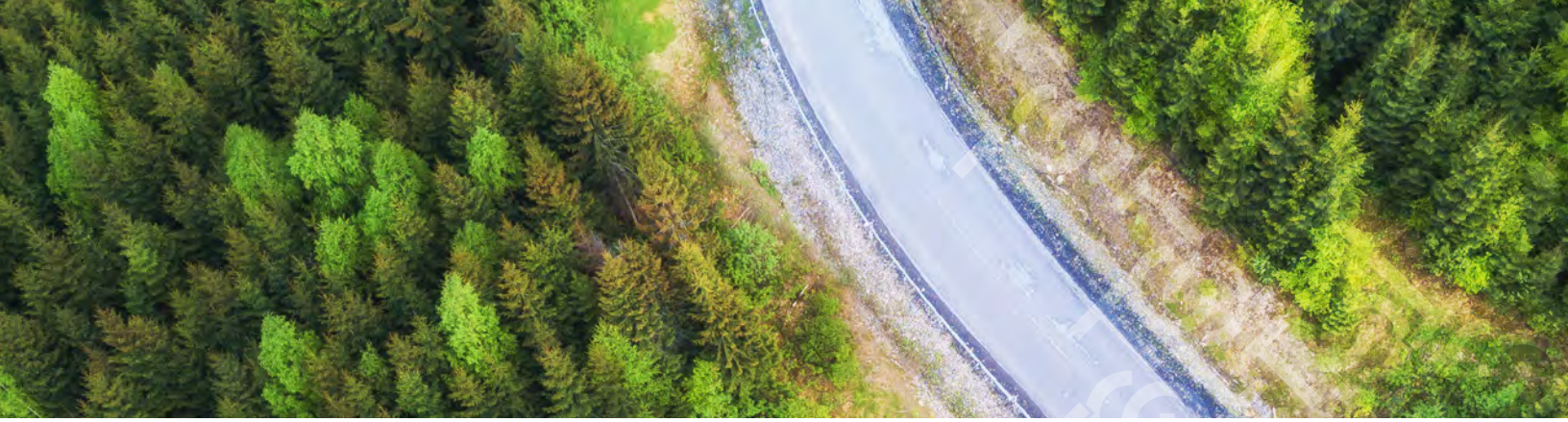
$259M for General Motors Canada, which includes conversion of the Ingersoll facility to manufacture GM's Brightdrop electric commercial vans

$131.6M for Honda's retooling of Alliston facility for hybrid-electric vehicle production

$50M for Lion Electric (battery pack assembly facility)

Furthermore, significant investments have been made to attract anchor investments in battery material processing and cell manufacturing to build a battery ecosystem, including:

- **NextStar Energy (Stellantis/LGES):** $5 billion for a battery manufacturing plant in Windsor.
- **GM/POSCO:** $500 million to produce cathode active materials in Bécancour.
- **Umicore:** $1.5 billion for a battery materials plant in Loyalist.
- **BASF:** purchase of land in Bécancour for cathode active materials production.



THE BATTERY VALUE CHAIN

According to McKinsey & Company, the market for battery cells should reach between $360-$410 billion by 2030. Canada is well-positioned to take advantage of these opportunities, both in terms of our strong automotive sector, and the battery supply chain. That is why the government launched Mines to Mobility, an initiative aimed at engaging stakeholders to better understand how Canada could seize opportunities in the global battery value chain.

In anticipation of increasing global and domestic demand for minerals, metals and materials, we developed the Canadian Critical Mineral Strategy, backed by an investment of nearly $4 billion in Budget 2022. The strategy includes 6 areas of focus:

- Driving research, innovation, and exploration
- Accelerating project development
- Building sustainable infrastructure
- Advancing reconciliation with Indigenous peoples
- Growing a diverse workforce and prosperous communities, and
- Strengthening global leadership and security

The government will prioritize six critical minerals (lithium, graphite, nickel, cobalt, copper, and rare-earth elements) at the outset of this strategy, which could provide both domestic and global supply chains with key battery minerals, metals and materials.

Additionally, the Regional Energy and Resource Tables offer an opportunity for the federal government, provinces, Indigenous communities, labour and industry to identify shared priorities of economic development, including those related to the transition to clean on-road transportation. For example, Canada and Ontario have agreed to focus on 5 key priorities, including developing critical value chains, which will support the province's automotive and battery manufacturing base.

Relevant Budget 2021 and 2022's investments in critical minerals

$79.2 million for public geoscience and exploration to better assess and identify mineral deposits

A **30%** Critical Mineral Exploration Tax Credit for targeted critical minerals

$47.7 million for targeted critical mineral R&D through Canada's research labs

$144.4 million for critical mineral research and development, and using technologies and materials to support critical mineral value chains

In addition to attracting investment to build domestic supply chains for mobility batteries, we have also made significant investments to support battery-related innovators who can provide goods and services into both domestic and global battery supply chains.

Attracting new investments in vehicle production and battery supply chains is critical to ensure the competitiveness of Canada's vehicle manufacturing sector. The skills challenges here are significant. In the short term, we need to improve our understanding of the skills required and foster industry-academia collaboration. Longer term, we can use existing federal programs to help businesses hire students, recent graduates, mid-career workers and international talent.

REDUCING TAXES

To support the growth of clean technology manufacturing in Canada, we've committed to a temporary 50% reduction for general corporate and small business income tax rates for businesses that manufacture zero-emission technologies domestically. This reduction applies to businesses that make zero-emission vehicles, batteries and fuel cells for zero-emission vehicles, and charging and hydrogen refuelling stations.

ADVANCING TECHNOLOGIES AND FREIGHT HAUL REGULATORY READINESS

While purchase incentives are helping to address the upfront costs of medium- and heavy-duty zero-emission vehicles, more work is required to adapt Canada's regulations so that these vehicles can be quickly and safely used.

To that end, we've launched the $75.8 million Zero-Emission Trucking Program to help accelerate the safe deployment of medium- and heavy-duty zero-emission vehicles on Canadian roads. Program funding will support safety testing, collaboration with provinces and territories development and modernization of guidelines, codes and standards, establishing trucking testbeds to support early deployments, and facility upgrades at the Government's Motor Vehicle Test Centre to support future heavy-duty zero-emission vehicle compliance testing and research.

CREATING SUSTAINABLE JOBS

While taking action now to combat climate change could make our economy stronger and more competitive, it must be done in a way that's fair for all workers.

Making sure the switch to zero-emission vehicles is done in a fair way involves preparing workforces to fully participate in the low-carbon economy, while minimizing the impacts of labour market transitions. This involves identifying and supporting inclusive economic opportunities for impacted workers and putting them and their communities front and centre in discussions that affect their livelihoods.

Maintaining and securing future vehicle production through investments is in line with the government's commitment to achieve a just transition through the creation of sustainable jobs.

REDUCING EMISSIONS FROM THE FLEETS OF TODAY

RETROFITTING, REPLACING, AND REPOWERING MEDIUM AND HEAVY-DUTY VEHICLES

Replacing the 2.6 million medium- and heavy-duty vehicles currently in operation with zero-emitting alternatives will take time. In the meantime, reducing emissions from these vehicles, which are expected to remain on the road for years to come, is key for reaching our emission reduction goals.

Budget 2022 announced an investment of $199.6M over 5 years for the Green Freight Program. This program will help to fleets reduce their fuel consumption and greenhouse gas emissions through fleet energy assessments, fleet retrofits, engine repowers, best-practice implementation and the purchase of low carbon vehicles.

Key numbers from the Green Freight Program

5,878 trucks and trailers assessed

1,620 trucks and trailers upgraded with **2,830** individual retrofits

$199.6M in new funding to support additional retrofits for roughly **90,000** trucks and trailers, **800** truck repowers, and **200** new low carbon trucks

A ROLE FOR CLEAN FUELS NOW AND IN THE FUTURE

Increasing use of clean fuels is another way to reduce emissions from vehicles already in use, especially trucks.

Clean fuels create fewer carbon emissions over the course of their lifespan than fossil fuels due to the bio-based feedstocks (raw materials, like corn, soybean oil, or crude oil, used to make other products) used, and/or clean energy processes in production. For example, renewable diesel has a life cycle carbon intensity that can be 85% lower than conventional diesel. Clean fuels can be used now to decarbonize the transportation sector, with very few, if any, changes required to the current fleets or infrastructure. Hydrogen fuel cell technologies could eventually be a viable replacement solution for large diesel engines, especially for long-haul heavy-duty vehicles (such as classes 7 and 8) for which the energy cost and time required for charging could be a disadvantage.

INCREASING CLEAN FUELS AVAILABILITY

To support the Clean Fuel Regulations, Budget 2021 re-affirmed an investment of $1.5B Clean Fuels Fund to grow production capacity of clean fuels in Canada that will de-risk (reduce the risk) the capital investment required to build new or expand production capacity, establish biomass supply chains, and develop enabling codes and standards.

The Clean Fuels Fund will also help us implement Canada's Hydrogen Strategy, which was developed to encourage investments and strategic partnerships in support of Canada's low-carbon hydrogen industry, including hydrogen for zero-emission vehicles. Budget 2021 also included an accelerated Capital Cost Allowance for Clean Energy Equipment as well as a tax reduction for zero-emission technology manufacturers.

INDIGENOUS-LED OPPORTUNITIES

Decarbonizing transportation and the transition to net zero presents important opportunities for Indigenous organizations, Indigenous communities and the government as we work together towards reconciliation.

Supporting Indigenous communities in their adoption of zero-emission vehicles and clean fuels offers unique opportunities as well as challenges in terms of growth, access to clean mobility solutions, economic and skills development, and tourism. Several Indigenous organizations and communities across Canada are leading zero-emission vehicle and clean fuels-related initiatives to help transition to a cleaner more sustainable future.

In addition to making zero-emission vehicles and charging and refuelling infrastructure more accessible and more affordable for Indigenous communities and organizations, increased awareness and capacity building is another key factor to drive greater adoption. Building off several past and current Indigenous awareness projects, we've created a dedicated funding stream for Indigenous-led awareness projects that promote the knowledge, use, and benefits of zero-emission vehicle and clean fuels.

This supports Indigenous organizations and communities to develop programming that is specific to their needs. To inform this initiative, the government held two requests for information, which showed that there is a need for funding flexibility that recognizes the uniqueness of every Indigenous organization and community.

We've invested in Canada's North through the Electric Vehicle Infrastructure Demonstration Program. One project in the Yukon is monitoring the impact climate has on the performance of fast-chargers and on electric vehicles. The project is being delivered in collaboration with Indigenous partners.

WORKING BETTER TOGETHER

Our success in meeting our zero-emission vehicle sales targets and eliminating tailpipe pollution from on-road transportation will require strong collaboration across all key players and partners, both within Canada and abroad. We're strengthening our ties with provincial and territorial governments, like-minded jurisdictions outside of Canada, and with Canadian stakeholders to make sure all are moving in the same direction in the move to zero-emission vehicles.

In 2017, the Government of Canada in partnership with provinces and territories, convened an advisory group of experts across industry, consumer groups, non-governmental organizations, and academia to help inform how zero-emission vehicle policies are developed.

As a means of continuing this important dialogue, the government is launching a new Zero-Emission Vehicle Council aimed at bringing together parties to identify, discuss, and work on solutions to further speed-up the transition to zero-emission vehicles. This Council will help to assess progress towards Canada's zero-emission vehicle sales targets and provide advice for strengthening existing zero-emission vehicle policies or identifying additional measures that could be pursued.

With the intent of sharing best practices and lessons learned, federal, provincial, and territorial governments continue to work together through a Zero-Emission Vehicle Working Group co-chaired by the Government of Canada and the Government of British Columbia. This working group meets quarterly and has been key to aligning Canada's zero-emission vehicle policies and identify other areas where government can work together.

Since 2018, federal, provincial, and territorial governments have been exploring options for retrofitting heavy-duty vehicles to reduce greenhouse gas emissions. The Government of Canada also convened a Federal Greening Freight Working Group with the goal of developing a whole-of-government approach to reduce emissions from the on-road freight sector. This working group provides a forum to share information and expertise related to the existing and future medium- and heavy-duty vehicle fleet, including an overview of projects, data profiles, and tools.

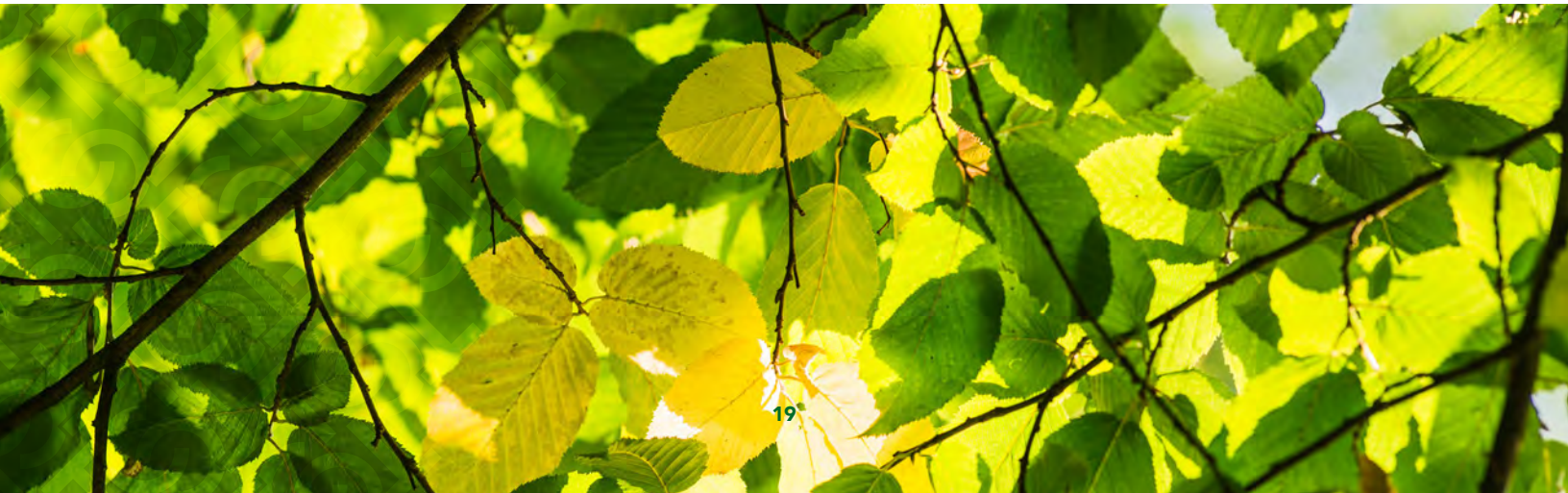
HYDROGEN STRATEGY WORKING GROUP

The Government of Canada released the Hydrogen Strategy for Canada after working with governments at all levels, industry, academic and non-governmental organizations to identify opportunities and challenges of using hydrogen fuels. The strategy lays out a framework to use hydrogen as a tool to achieve Canada's goal of net–zero emissions by 2050 and position Canada as a global, industrial leader in clean fuels.

Hydrogen is a relatively new fuel for most Canadians and businesses. As such, there is an opportunity to increase our collective awareness and knowledge of this fuel. In order to create a vibrant hydrogen sector, it's important that we increase Canadians' awareness about hydrogen.

INTERNATIONAL PARTNERSHIPS

We're also strengthening our international alliances and partnerships on zero-emission vehicles through multiple fora, recognizing that Canada can better meet our zero-emission vehicle sales targets when we move in tandem with other large markets, like California and the European Union. Canada joined other like-minded jurisdictions to work towards all sales of new light-duty vehicles being zero emissions by 2035 in leading markets, and by 2040 globally. Canada was also among the first to sign a global agreement to work towards 100% zero-emissions medium- and heavy-duty vehicles by 2040.



CANADA'S INTERNATIONAL ZERO-EMISSION VEHICLE PARTNERSHIPS

Electric Vehicle Initiative: Since 2016, Canada has been a member of this multi-government policy forum dedicated to accelerating the adoption of electric vehicles. This initiative was launched under the Clean Energy Ministerial, a high-level dialogue among Energy Ministers from the world's major economies.

The International ZEV Alliance: Since 2019, Canada has been a member of this alliance of like-minded jurisdictions all working together to accelerate the transition to zero-emission vehicles. The alliance gives governments the chance to cooperate on zero-emission vehicle policies and aims to build global momentum by recruiting other jurisdictions to join by setting ambitious zero-emission vehicle targets.

Drive to Zero: Canada is a founding member of this global campaign aimed at speeding the growth of zero-emission commercial vehicles. In partnership with the Netherlands, Drive to Zero co-leads the global memorandum of understanding on medium- and heavy-duty zero-emission vehicles, which Canada signed onto at the 26th United Nations Climate Change Conference (COP26).

The ZEV Transition Council: Canada is a proud founding member of this council, the world's first political forum through which ministers meet to discuss how to accelerate the pace of the global zero-emission vehicle transition. The council spearheaded the COP26 declaration on accelerating the transition to 100% zero emission cars and vans, which Canada signed onto.

To build on this declaration, Canada also signed onto the Accelerating to Zero (A2Z) Coalition, along with over 200 other signatories, that was launched at COP27. The A2Z Coalition acts as a platform to support the development and implementation of ZEV policies globally.

Roadmap for a Renewed U.S.-Canada Partnership: In 2021, the Canadian and American governments agreed to take aligned and accelerated policy actions on efforts to achieve a zero-emission vehicle future. In support of this roadmap, the governments signed a joint statement on transportation and climate change, which calls for greater collaboration to achieve 100% new light-duty zero-emission vehicle sales and to accelerate the supply and demand of medium- and heavy-duty zero-emission vehicles.

MOVING INTO THE FUTURE

More work lies ahead to make sure that all Canadians can make the switch to zero-emission vehicles, which will be key to Canada's goal of achieving net zero emissions by 2050. While zero-emission vehicles are slowly becoming mainstream, many Canadians won't make the switch away from gas and diesel vehicles without targeted support.

Additionally, there is an opportunity for all levels of government to further analyze policies to encourage certain demographic groups, including marginalized or disadvantaged communities, to adopt zero-emission vehicles. For example, jurisdictions like California are starting to incorporate environmental justice considerations into their zero-emission vehicle policies by including specific provisions tailored to expand zero-emission vehicle access in targeted communities.

While there are positive trends with respect to zero-emission vehicle use in the North (light-duty zero-emission vehicle sales reached 4.5% in the Yukon in 2021), more work is needed to overcome key barriers before the vehicles become more widely used.

In addition to the barrier of high up-front cost, the cold climate and limited zero-emission vehicle and infrastructure availability in these parts of the country is affecting demand for these vehicles. Many Northern communities also rely on off-grid diesel for electricity generation, which reduces the economic and environmental benefits of switching to zero-emission vehicles.

The government will continue to work with those living in these communities to help overcome these barriers. This includes building zero-emission vehicle infrastructure in the North, increasing access to affordable clean electricity or hydrogen, and researching, developing and demonstrating that zero-emission vehicles can meet the needs of consumers and businesses in these regions. For example, plug-in hybrid vehicles, which have both an internal combustion engine vehicle and batteries with significant electric range, will remain an option for northern, rural, and remote communities.

As we look ahead to more Canadians using zero-emission vehicles, it becomes increasingly clear that more work is needed to make sure that Canada's grid can support the increased electricity demand. Canadian electric utilities, and federal and provincial governments have been monitoring the rise of electric vehicles, forecasting the increased load, monitoring their impact on the grid, studying customer adoption behaviours, and continuously developing new tools to plan for grid upgrades.

In 2016, the government created an Infrastructure and Grid Readiness Working Group to inform infrastructure and grid readiness efforts. At the beginning of 2020, the government commissioned a study to help Canadian utilities better understand the expected electrical energy demands from future vehicle fleets and its potential impact on the grid.

Following that study, a request for information was sent to Canadian stakeholders to better understand the grid readiness impacts of the policies aimed at faster electric vehicle use. Stakeholders highlighted the importance of innovation in regulatory frameworks and rate designs, the need for coordinated approaches and knowledge sharing, concerns about infrastructure readiness and availability, as well as the risks of disproportionate impacts. Insights gathered from this request for information has helped to understand stakeholder and system needs for grid readiness and future work to support these needs.

The global transition to a low-carbon future is expected to result in a significant increase in resource consumption. Circular economy solutions are needed to close material loops, minimize waste, and mitigate pressure on critical resources used in key climate infrastructure and technologies.

Electrification of the transportation sector is expected to follow a similar trend. Working with provinces and territories, as well as industry stakeholders, the Government of Canada is planning to develop national guidelines for managing electric vehicle batteries in an environmentally-sound way. The government will also be speaking with provinces and territories to explore the merits of a national approach to managing electric vehicle batteries at end of life.

Given the high value of the metals contained in advanced batteries used for mobility and stationary applications, there are strong market incentives to improve the circularity of battery supply chains. This is creating an opportunity for Canadian battery recycling innovators like Li-cycle and Lithion to position themselves as clean, cost-competitive partners to existing battery supply chain actors like automakers, cell manufacturers and producers of active materials for batteries. It's also creating an opportunity for Canadian innovators like Moment Energy to develop new business models that involve repurposing batteries used in mobile applications for use in stationary applications.

Federal innovation funding agencies have been providing support to help these companies develop and commercialize their technologies. Provinces and territories are also interested in creating regulatory regimes that support responsible management of end-of-life batteries, to ensure the protection of human health and the environment while also facilitating the recovery of important metals and materials for re-use in battery supply chains. The federal government is undertaking research and analysis to inform these processes so that there is coherence with pan-Canadian efforts to develop competitive supply chains.

INVESTING IN PUBLIC TRANSIT

Public transit and active transportation investments are a key part of Canada's plan to rapidly reduce greenhouse gas emissions and achieve net-zero emissions by 2050. The Government of Canada is investing heavily in public transit and active transportation in order to help provide sustainable transportation options in communities across Canada.

In February 2021, the government announced $14.9 billion for public transit projects over the next eight years, which includes permanent funding of $3 billion per year for Canadian communities beginning in 2026-27. It also provides $5.9 billion to support the expansion of large urban transit systems, the electrification of bus fleets, active transportation infrastructure and transit solutions for rural communities. This new funding is separate from the nearly $30B in funding made available through the Investing in Canada Plan. Funding is already advancing crucial projects in Ontario and is reducing the emissions associated with transportation through the Zero Emission Transit Fund, Active Transportation Fund and Rural Transit Solutions Fund.

The Government of Canada is making significant investments in public transit, understanding that we must reduce transport emissions by both aiming to increase modal share of sustainable forms of transportation, while also leading efforts to decarbonize on-road vehicles. Building a zero-emission public transit system across Canada is a key step to cutting emissions, while transit systems contribute to emissions reduction by encouraging modal shift, combatting congestion, and reducing reliance on personal vehicles.

However, maximizing transit benefits in terms of emissions reductions depends on encouraging intensification and effective land-use planning in communities. Additionally, through its first-ever National Active Transportation Strategy released in 2021, we've committed to helping deliver active transportation options for Canadians across the country, supporting the transition to cleaner forms of transportation that aid in reducing emissions.

Going forward, the Government of Canada's $3 billion in permanent public transit funding starting in 2026–2027 aims to provide communities and regions the stable transit funding they need to plan for the future and utilises integrated planning to better advance economic, environmental and social outcomes related to transit projects. The government continues to consult on the delivery of permanent transit funding to inform a long-term investment strategy that aims to build sustainable, and inclusive communities that will put Canada on a path to a net-zero future.

CONCLUSION

Zero-emission vehicles offer the promise of a future in which Canada is a leader in reliable, affordable, and sustainable transportation.

The measures outlined in this action plan will work together to reduce greenhouse gas emissions from the on-road sector and support Canada's transition to a low-carbon transportation system. Decarbonizing transportation and shifting towards zero-emission vehicles is critical to meeting our ambitious climate change targets.

While this plan is just one part of our strategy to reduce emissions from all modes of transportation, on-road transportation contributes the most to this sector's national emissions. Decarbonizing on-road transportation is a necessary steppingstone on the path to net-zero by 2050.

Decarbonizing on-road transportation means not only reducing tailpipe emissions from vehicles but reducing overall vehicle lifecycle emissions. While Canada has one of the cleanest electricity grids in the world, there is much work still to do. The electrical grid of tomorrow will need to undergo an important shift to ensure that the electricity being provided to zero-emission vehicles is coming from non-emitting sources. According to the Canadian Climate Institute as transportation becomes more electrified, electricity systems must undergo three transformational changes, becoming bigger, cleaner, and smarter. This will require ambitious changes to Canada's electricity systems; however, it is achievable given Canada's strong starting position.

It's critical to ensure that this shift provides benefits to all Canadians. So far, the adoption of zero-emission vehicles has been largely in urban and higher income areas. Developing charging and refuelling networks for rural and remote regions, and increasing RD&D related to battery performance to improve usage in colder climates will be essential. We need to ensure that no community is left behind.

The government's approach to zero-emission vehicles will evolve over time to allow for adjustments of policies following assessments and feedback from Canadians and stakeholders. Moving forward, the government will detail its future action to decarbonize on-road transportation through the progress reports required under the *Canadian Net-Zero Emissions Accountability Act*.

Through this action plan, Canada continues to be competitive in the global movement to electrify transportation. This transition will require collaboration from governments, industry, and citizens alike to be successful. To mitigate the risks of climate change and achieve the reductions in greenhouse gas emissions necessary to secure a net-zero future, we will need to harness our ingenuity, talent, and strengths in innovation to confront the climate crisis head on and provide a brighter, cleaner future for all Canadians.