Canada's Approach to Decarbonizing Medium- and Heavy-duty Vehicles

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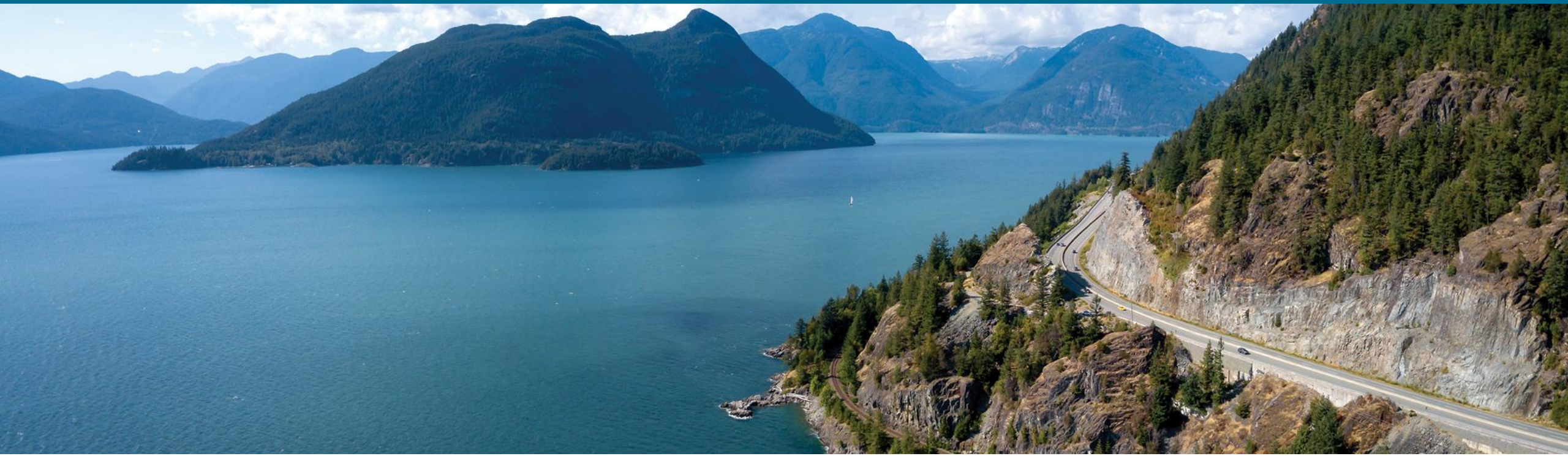

Government of Canada | Gouvernement du Canada

Canada

Context

- In 2021, transportation was 22% of Canada’s total GHG emissions, about 80% of which came from on-road vehicles.
  - Accelerating zero-emission vehicle (ZEV*) adoption is essential to decarbonize the sector.
- Canada's 2030 Emissions Reduction Plan set an ambitious target for 100% of new medium- and heavy-duty vehicles (MHDVs) to be ZEVs by 2040 (where feasible).
- Canada’s Action Plan for Clean On-Road Transportation (released December 2022) outlined a suite of complementary measures.
  - Regulations, incentives, investments in charging and hydrogen refuelling stations, research, development and demonstration projects, and supporting Canada's automotive sector and supply chain to make the transition to ZEVs.
- Canada is also working collaboratively with international partners to help advance the transition to medium- and heavy-duty ZEVs and build global momentum.

**ZEV defined to mean an electric vehicle, a plug-in hybrid electric vehicle (PHEV) or a fuel cell vehicle.*

Whole of Government Approach

Transport Canada

Affordability, Innovation & Safety

+ Federal Policy Lead on ZEVs
+Federal Policy Lead on Border Transportation Policy

Environment and Climate Change Canada

Regulations

Infrastructure Canada

Zero Emissions Transit

Treasury Board of Canada Secretariat

Government Fleets

Innovation, Science and Economic Development Canada

Business Development and Manufacturing

Natural Resources Canada

Charging Infrastructure & Awareness

CANADA INFRASTRUCTURE BANK

Strategic Investment

Suite of Measures

Regulations:

- More stringent Heavy-duty vehicle and engine regulations
  - Including more stringent air pollutant regulations, focused on NOx, that will also drive ZEV adoption
  - GHG regulations & possible ZEV requirements
- Clean Fuel Regulations

Incentives:

- Incentives for Medium- and Heavy-duty Zero-Emission Vehicles (IMHZEV)
- Zero-Emission Transit Fund (ZETF) / Permanent transit funding
- Zero-Emission Bus Initiative (Canada Infrastructure Bank)
- Green Freight Program (GFP)

Industrial and Supply Chain Transition:

- Clean Technology Manufacturing Investment Tax Credit (ITC)
- Strategic Innovation Fund (SIF)

Infrastructure:

- Zero Emission Vehicle Infrastructure Program (ZEVIP)
- Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative (EVAFIDI) – program finalized March 2024
- Charging and Hydrogen Refueling Initiative (CHRI)

Research, Development, and Demonstration (RD&D):

- Zero-Emission Trucking Program (ZETP)
- Electric Vehicle Infrastructure Demonstration (EVID) Program
- Energy Innovation Program (EIP)

Awareness and Training:

- Zero-Emission Vehicle Awareness Initiative (ZEVAI)
- Indigenous Led Awareness Pilot
- SmartDriver and SmartWay

Government Leadership:

- By 2030, at least 40% of new commercial medium- and heavy-duty vehicle purchases will be ZEVs

2023-24 Accomplishments

- Reached about **2% market share** for MHZEVs in Canada (made up primarily of class 2B-3 and Buses).
- Nearly **2,000 vehicles incentivized** through the iMHZEV program.
- Launched the **Green Freight Program** 1st RFP on conversions and repowers of truck engines
- **Zero-Emission Trucking Program:** signed funding agreements with Canadian provinces to accelerate MHZEV readiness; completed 6 research projects ranging from low-speed sound testing to evaluating trailer aerodynamics; and launched 3 Zero Emission Trucking Testbeds to gather data and evaluate performance in Canadian commercial freight haul.
- **Zero-Emission Bus Toolkit** developed by Canada, the U.S. and Mexico.
- On track to meet the goal of **5,000 zero-emission school and transit buses** by 2026.
- Launched new **ZEV Council** to strengthen collaboration between governments and domestic stakeholders
- Launched **ZEV online hub**

Potential and Challenges- MHZEVs

Potential:

- Lower fuel and operating costs – Overall vehicles starting to become economic from a total cost of ownership perspective even without incentives (lower class 2B-3 for now). Other weight classes economic with provincial + federal incentives.
- Public good perspective – lower air pollution (improved human health) and GHGs.

Challenges:

- **Infrastructure availability and grid upgrades** to support a full-scale transition to MHZEVs, including long-haul, in line with potential regulatory requirements.
- Not yet perfect substitutes, especially for long-haul. Range/recharging time (BEV mainly), weight penalty.
- **Uncertainty and risk** of new technology, battery life, end-of-life considerations.
- Need to build greater **awareness of the economic opportunity** for fleet owners, and support electrification planning.

Looking Ahead - CDA-US Border as an Opportunity?

- In 2018, ~11.15 million of truck movements across the border annually
- Preliminary thinking: Can we leverage this fact to further incentivize ZEV? Future-proof the border?

Some Ideas:

1. **Green-Lane Pilot-** Given time is money in trucking and logistics, can we have accelerated crossings for ZEV trucks? Pilot for consideration at interested border-crossings?
   - Metrics: incremental uptake? # of crossings?
   - Which crossing to target to maximize impact? Typical median wait times on the Cdn side of ~5-15mins; but 95th percentile wait times for some crossings 30-40 mins. Enough of an incentive?
2. **Strategic investments in charging/refuelling infrastructure at border-crossings?**
   - MW charging or hydrogen refuelling?
3. **Linkage to US National Zero-Emission Freight Corridor Strategy?**