



Zero Emission Trucking Program

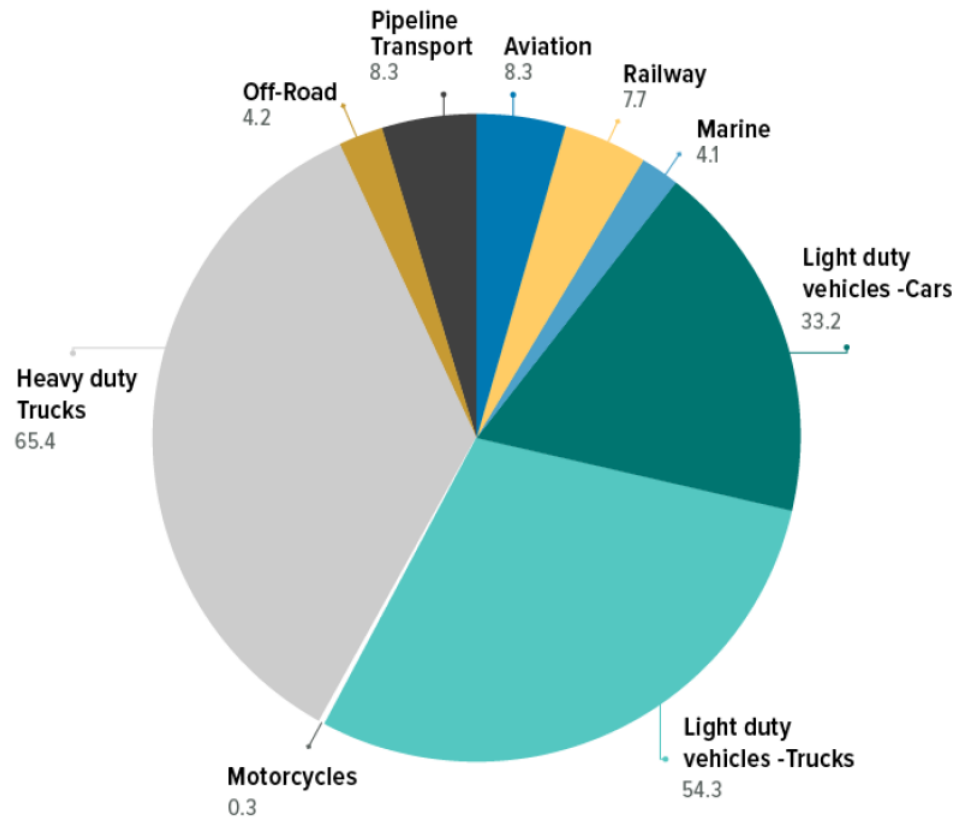
Task Force on Vehicle Weights and Dimensions Policy

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Transport Canada*

Heavy-duty transport is a key economic driver but also a major emitter

2019 CANADA'S TRANSPORTATION EMISSIONS (Mt CO₂e)

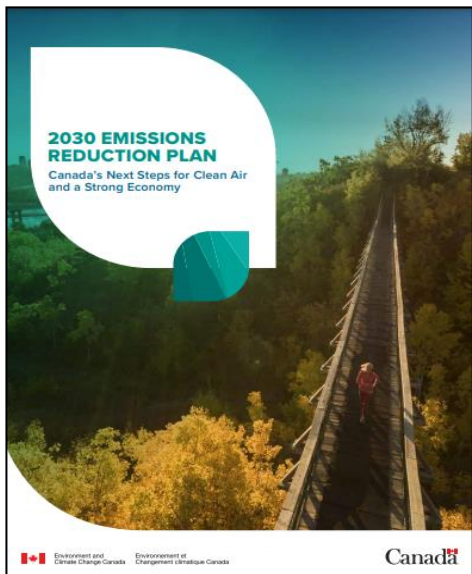


- U.S. goods and services trade with Canada totaled an estimated \$718.4 billion in 2019, with 90% of all goods and 95% of mineral shipments being moved by truck.
- Transportation accounts for 25% of Canada's GHG emissions, with approximately 9% of Canada's total GHG emissions stemming from medium and heavy-duty vehicles alone.
- While light-duty ZEV adoption in Canada is growing in popularity, similar penetration in the MHZEV sector must overcome several hurdles: technological readiness, charging/refueling infrastructure, operational readiness, vehicle availability, etc.

Despite remaining challenges, industry is interested in zero emission solutions

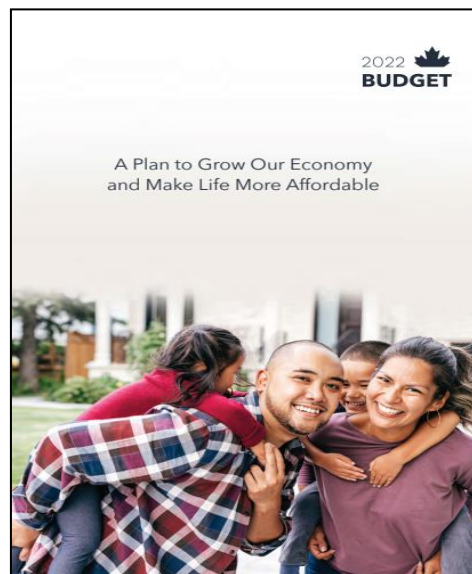
- **OEMs** such as Volvo, Peterbilt, Freightliner, Hyundai, Tesla, Nicola, Lion and many others have models on offer or soon to come online. Over 60 separate models and trims are eligible for federal purchase incentives.
- Similarly, early **Canadian deployments** are being considered in several regions, for example: AZETEC in Alberta, Hyzon's rotating commercial vehicle trials, and potential pilots out of the Port of Vancouver.
- And there is similar interest among **Canadian fleets**, with a cursory scan indicating that fleet operators have already placed orders for over 625 zero-emission heavy-duty trucks over the past few years.
- To facilitate the safe introduction of Medium / Heavy Duty Zero-Emissions Vehicles (MHZEV), governments are working to establish an **enabling framework** of guidelines, codes, standards and regulations.

Zero Emission Trucking Program (ZETP): An Origin Story



The ZETP was one among a suite of measures announced in the **March 2022 [Emissions Reduction Plan](#)** to reduce emissions from the transportation sector:

- LDV Purchase Incentives (TC)
- MHDV Purchase Incentives (TC)
- Truck Retrofits (NRCan)
- Infrastructure (NRCan and CIB)
- Greening Government Fleets (TBS)
- Upcoming emissions regulations / sales mandates (ECCC)



[Federal Budget 2022](#) subsequently provided the ZETP **\$75.8M in funding over five years**, ending 2026-27, to contribute to accelerating the safe deployment of medium- and heavy-duty zero-emission vehicles (MHZEV) on Canadian roads.

Zero Emission Trucking Program (ZETP) – Core Program Objectives



As per the funding decision in Budget 2022, the ZETP will focus on **advancing its mandate by pursuing 5 key activities:**

- **PT Calls for Proposals:** Provide capacity funding to PTs via contribution agreements to develop, modernize, and align guidance, codes, standards and regulations for zero emission trucking.
- **Zero Emission Trucking Testbeds:** Support 2 HDZEV deployments to bring industry, FPT and research stakeholders together to evaluate technologies in Canadian conditions, share best practices, and accelerate HDZEV readiness in Canada.
- **Directed Studies and Research:** Address data and knowledge gaps to remove barriers to the introduction of zero emission trucks in the Canadian marketplace.
- **MHZEV Safety Research Program:** Validate MHZEV crashworthiness performance and inform the development of new safety requirements, as needed.
- **Motor Vehicle Test Centre Capital Investments:** Construct a Commercial Vehicle Lab and accompanying H2 refueling and HDV charging infrastructure to support HDV testing and research on site.

Zero Emission Trucking Testbeds

Objectives: With MHZEV technologies at an early stage of readiness, we believe that there is an **opportunity to play a federal catalyst and convenor role in this space by bringing stakeholders together around early deployments** to address barriers to this emerging technology and accelerate readiness for MHZEV in Canada. Test beds will help:

- 1. Gather data and address questions** on the real-world performance of zero-emission HDVs involved in Canadian commercial freight haul (e.g., impact of weather, routes, maintenance cause/effects, driver perspectives, etc.).
- 2. Provide an opportunity for stakeholders** involved in the enforcement, regulatory and safety frameworks for Canada's trucking sector **to accompany early real-world zero-emission freight-hauling pilots.**
- 3. Bring stakeholders together through dedicated workshops and ongoing collaboration** throughout the testbeds to share experiences, results, lessons learned, training curricula, and best practices as they relate to safety and MHZEV readiness.

Testbed Design: Transport Canada is interested in supporting **testbed activities delivered by consortia** of research organizations, vehicle manufacturers, PT officials, trucking fleets, and infrastructure operators over the life of the Zero Emission Trucking Program.

What are Regulatory Testbeds?

Regulatory testbeds represent an increasingly popular approach to oversight and regulatory development for new and emerging technologies. Both regulators and the regulated are brought together to pilot technologies in real-world conditions, adopting necessary training, controls and limitations to mitigate any inherent risks.

Directed Studies

Objective: Partner with the National Research Council's *Clean and Energy-Efficient Transportation (CEET) Program* to produce an **Analysis of Battery Technologies for Heavy-Duty Trucking in Canada** report.

Tasks:

- **Literature review** of current and next-generation battery technologies, cost estimations, availability, performance, charging infrastructure, industry innovations, and Canadian considerations.
- **Analysis and recommendations** for HDZEV battery technology applications in the Canadian context.
- **Present findings** to TC's ZETP, eTV Tech Working Group and ultimately publish for the broader public.

Collaborations: Potential for a second phase after the final report, in collaboration with OGDs, based on the report recommendations and OGD needs.

Schedule:

Signed Interdepartmental Agreement with NRC for \$25,000

Complete Draft Report



MHZEV Safety Testing and Research

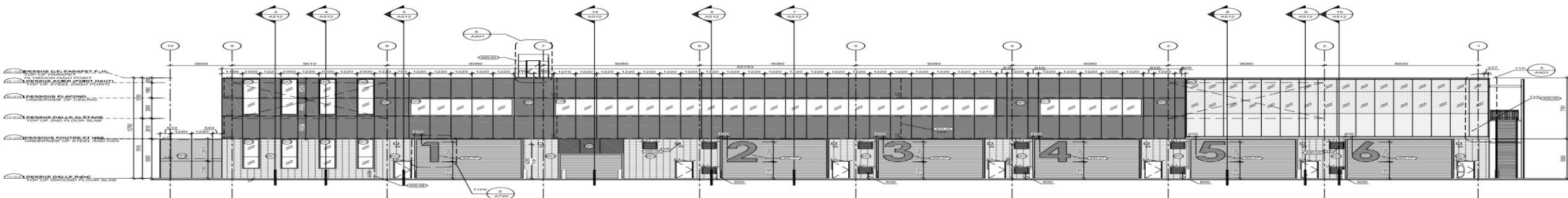
Safety testing and research will be prioritized through test plans developed in collaboration with North American regulators. Initially identified priorities include:

- Building capacity to conduct GTR-13 and GTR-20 testing on MHZEVs at the MVTC
 - MVTC currently conducts safety testing on light-duty EV electrical systems, including post-crash safety testing
 - Build capacity to conduct hydrogen fuel system integrity testing at the MVTC, and to test MHZEVs
 - Seminar on hydrogen safety in laboratory settings
- Crashworthiness and occupant protection research
- Other areas of interest:
 - Evaluating sound levels from MHZEVs and their conventional counterparts operating at low speeds
 - Testing AEB performance of MHZEVs with regenerative braking capabilities
 - Field-of-view evaluation on MHZEVs with advanced aerodynamic shapes

Motor Vehicle Test Centre HD-ZEV Capital Investments

Included in the ZETP is **capital funding to augment MHZEV testing capabilities** at TC's [Motor Vehicle Test Centre](#) in Blainville, Quebec. These investments include:

- Construction of a 24,000 sq ft **Commercial Vehicle Laboratory (CVL)** that meets modern green building standards and is accessible to industry, federal departments, other order of government, and academia **by mid-2027**;
- Installation of on-site **heavy-duty charging and hydrogen refuelling stations**; and
- Outfitting the CVL with **specialized equipment and staffing with highly qualified personnel** to conduct research and testing on the next generation of light, medium and heavy-duty vehicles.





Zero Emission Trucking Program

Thank you for the opportunity to speak with you today.

If you have questions or comments, please feel free to contact us at:

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