Accelerating ZE MHDV Adoption in Canada:
KEY BARRIERS AND PRIORITY RECOMMENDATIONS

EMC Zero Emission Medium and Heavy Duty Working Group
July 2024

Currently, ZE MHDV market share remains low (>1%) compared to passenger ZEV sales (~12%). GHG emissions from the MHDV transport sectorare forecasted to exceed those of the passenger sector unless the pace of MHDV electrification is accelerated.

The ZE MHDV segment includes private vehicles (medium-duty pickup trucks) for personal use; commercial vehicles for freight and construction ; and transit buses. Solutions to electrify each segment are needed.[1]

EMC's ZE MHDV Working Group, composed of ~25 industry members, ranging from manufacturers to utilities to NGOs and other MHDV specialists, has identified key barriers and priority recommendations to accelerate ZE MHDV adoption.

1. KEY BARRIER: Capital costs

The higher upfront capital costs for electric MHD vehicles and charging infrastructure remain a barrier despite potential total cost of ownership benefits. This is particularly true for smaller private fleets with less cash on hand, public sector fleets, and fleets that face high one-time utility connection costs.

RECOMMENDATION

1.1. ZE MHDV incentives: Continue and expand access to ZE MHDV incentives for vehicle purchases and ensure support exists also for both charging equipment and power capacity upgrades.

i. Vehicles: **Simplify** application processes for existing incentives and **expand** incentive offerings for vehicles.

i. Charging infrastructure: Focus immediate funding on **depot / return-to-base charging**, with an outlook to funding en-route and/or shared installations as industry aligns on standards in the coming year(s).[2] Include **flexibility** for different business models, allowing for both CAPEX and as-a-service options.

[1] While EMC supports advancing work across all MHDV sectors, freight remains the single largest growing on-road emissions sector in Canada. The Government of Canada notes that on-road GHG emissions increased by 18% between 2005 and 2019. However, freight vehicles in particular represented the largest disproportionate share of this increase – having grown 35% between 2005 and 2019, despite significant advances emissions technologies, due to major increases in the fleet size. https://publications.gc.ca/site/eng/9.506002/publication.html

[2] Because Megawatt Charging Standard (MCS) remains in development and the MHDV industry hasn't yet aligned on NACS, and because smaller vehicles may use Level-2 standards, any funding program should be agnostic of charging standard.

2. KEY BARRIER: Lack of Total Cost of Ownership (TCO) Data

Total cost of ownership for ZE MHDVs is not well understood and can vary dramatically from province-to-province based on local utility policies, fleet size (which may dictate privately owned substations), residual vehicle value and regulatory credit programs for clean fuels.

RECOMMENDATIONS

2.1. Canadian TCO calculator: Work with a credible Canadian academic institution or economic consultancy to produce an ZE MHDV Total Cost of Ownership calculator[3] that includes communication and awareness tools related to regulatory credit programs like CFR and BC LCFS, and V2G/energy storage opportunities.

2.2. Data-sharing: To broaden industry knowledge, make public data-sharing a requirement for providing funding to fleets

2.3. CFR Education: Provide on-demand educational assets on CFR benefits for fleets

3. KEY BARRIER: Grid connection timeline

Insufficient near-term planning of utility electrical capacity, especially in major freight districts, will restrict or delay fleet electrification. Utilities are regulated to be reactionary for capacity upgrades of their distribution system, resulting in long delays from the moment a fleet expresses its need for upgrade. To reduce these delays, utilities need to proactively forecast and upgrade their capacity so they are ready when ZE MHDV fleets need to connect. They also need to proactively engage with fleets to fine-tune the planning process, recognizing that fleets will become major utility customers in the future.

RECOMMENDATIONS

3.1. Faster grid connection: Work with provinces to enable regulatory reform to allow for proactive system upgrades by utilities

3.2. Forecasting: Fund utilities to establish detailed and real-time updated capacity maps so that landowners / fleet operators will know, when planning, when their properties will be ready to support which level of load

4. KEY BARRIER: ZE MHD Vehicle Supply

Canada may see a shortage of ZE MHDVs because 11 US states have formally adopted California's Advanced Clean Truck rule, establishing a legal requirement on manufacturers to achieve strong ZE MHDV adoption targets. Without reciprocal action mandating manufacturer supply in Canada, across all sectors of MHDV use including passenger transportation and freight, access in Canada to the world's limited ZE MHDV supply is likely to be delayed, hindering adoption by operators who are ready to transition.

RECOMMENDATION

4.1. ZE MHDV sales mandate: Move forward to establish a ZE MHDV standard that ensures Canadian fleets have equal access to ZE MHDVs as US fleets do in ZE MHDV / ACT States.

[3] Examples may include an adaption of MIT's CarbonCounter.com which exists for passenger cars.

5. KEY BARRIER: Insufficient Fleet Planning Capacity

Many fleet operators currently lack the planning capacity necessary in the multidimensional domain of ZE MHDV vehicles and charging infrastructure. Fleets in the early stages of the transition are pioneering the first operational processes, with few operational metrics or data and a major change in management process ahead of them. To accelerate the transition, fleets need access to expert resources both internally and externally as well as mature planning tools and methods.

RECOMMENDATIONS

5.1. Fund planning: Continue to fund fleet electrification planning with special consideration for smaller fleets.

5.2. Leadership training: Support the creation of leadership training programs for fleet managers, sustainability officers, procurement officers and facility managers to help them lead the transition.

DIVE DEEPER

To learn more about the current state of the ZE MHDV ecosystem and solutions to fill the gaps and accelerate electrification, read the full **Ecosystem Gap Analysis 2024 Update** prepared by EMC's ZE MHDV Working Group.

ABOUT EMC

Founded in 2006, Electric Mobility Canada is a national membership-based industry association dedicated exclusively to the advancement of electric mobility as an opportunity to support the Canadian economy while fighting climate change and air pollution.

EMC has a wide range of member organizations including, light, medium, heavy-duty, and off-road vehicle manufacturers, infrastructure providers, utilities, tech companies, mining companies, research centers, governmental departments, cities, universities, fleet managers, unions, environmental NGOs, and EV owners' groups.

EMC's mission is to enable and accelerate the transition to sustainable electric mobility in Canada through advocacy, collaboration, education, and thought leadership, with the end goal of creating a cleaner, healthier, and more prosperous future for all Canadians.

Electric Mobility Canada supports the activities of its members by:

- Communicating legislative, policy, technical and operational matters of key interest pertaining to electric mobility to our membership. This includes identifying the actions required to meet the needs of the members and proactively communicating these needs to policy makers and other stakeholders.
- Establishing partnerships to accelerate the adoption of electric mobility through research, demonstration projects, policies, programs, and strategies to increase market penetration.
- Acting as a resource center for relevant and contemporary information on electric mobility from across Canada and around the globe.

Electric Mobility Canada is the unifying and authoritative voice for the Transition to electric mobility across Canada.

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