



Medium-duty box trucks

Used everywhere in urban centres, the medium-duty box truck is ready to go electric.

A box truck is a two-piece vehicle where the cargo box sits on the chassis. Most medium-duty box trucks are not driven long distances; rather, they follow a routine schedule and are parked in the same location at predictable times. There are few constraints to electrifying the medium duty truck category; as much as 65% of medium trucks could be electrified today.

Ease of electrification



Used for

Pick-ups and deliveries (movers, deliveries of parcels, furniture, groceries, etc.)



Average distance travelled daily

Less than 160 km



Number on the road in Canada

40,000 to 60,000



Time to charge

- Slower charger (Level 2): 5-8 hours
- Faster charger (direct current): ≈ 3 hours



Annual emissions from one diesel-powered box truck

18 to 20 tonnes CO₂e (4 times as high as a passenger car)



Cost to buy now

Approximately 2 times as expensive as a diesel equivalent



GHG savings if entire Canadian box truck fleet is replaced with electric

1 million tonnes CO₂e/year



Total lifetime cost by 2030 (without incentives)

Cost competitive with a diesel truck



Charging location

Charges overnight at a designated depot



Major North American suppliers

Peterbilt, Lion Electric, GreenPower, NFI, ROUSH



Roadblocks

- While performance has been successfully tested for extreme temperatures (-25°C), concerns remain that cold temperatures can lower electric range.
- Batteries can take up some of the cargo space, although this can be circumvented by optimizing battery sizes and improving the design of the chassis.

Key to acceleration

- Subsidies and information programs can support the adoption of medium-duty electric box trucks in urban centers where use cases have already been demonstrated.
- Fleet owners and drivers need to be engaged to test zero-emitting box trucks under various and extreme weather conditions and in remote areas.
- Uptake could be increased if ZE delivery trucks were allowed preferential parking access over conventional vehicles; zones designated as low- and zero-emission would also encourage uptake.

Transportation is the second biggest source of greenhouse gas emissions after the oil and gas sector in Canada.

Replacing fossil-fuelled vehicles (from passenger cars to long-haul trucks) with low- or zero-emission vehicles is essential to lowering pollutants in the atmosphere and keeping global warming below a 1.5 degree C increase. The federal government is currently implementing policies to hasten the transition to electric passenger cars, but buses and trucks must also be electrified. These bigger vehicles make up 35% of overall emissions generated by the transportation sector. Regardless of the size, we can jumpstart the transition to zero-emission vehicles through policy that implements a sales mandate which includes specific quotas and firm deadlines.



Photo: Roberta Franchuck, Pembina Institute

Pembina Institute resources

- Laying the Groundwork: Exploring the challenges and opportunities in the transition to zero-emission medium- and heavy-duty vehicles pembina.org/reports/laying-the-groundwork-mhdvs.pdf
- Towards Clean MHDVs: Preliminary policy solutions to decarbonize Canada's MHDVs pembina.org/reports/towards-clean-mhdvs-recommendations.pdf
- Flat-packing and ZEVs: IKEA helps consumers make low-GHG choices pembina.org/blog/flat-packing-and-zevs-ikea-helps-consumers-make-low-ghg-choices

To learn more about the most effective means of transitioning Canada's biggest vehicles from fossil fuels to zero-emitting, see our policy analysis and recommendations at pembina.org/Decarbonizing-MHDVs

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