



School buses

Of all the buses and trucks on the road, school buses are one of the easiest to electrify.

School buses are a prime candidate for electrification. Because school buses follow predictable routes, scheduling overnight charging at a centralized depot is straightforward. Electric buses also offer immediate fuel and maintenance cost savings over diesel buses, contributing to the cost effectiveness of investing in electric buses.

Ease of electrification



Using vehicle-to-building technology, a fully charged school bus can provide electricity to schools; in the future, vehicle-to-grid technology means that a fully charged school bus could also provide electricity to the grid. Both options strengthen the business case for electric school buses.



Used for

Transporting children to school and on field trips



Number on the road in Canada

51,000



Annual emissions from one diesel school bus

27 tonnes CO₂e (6 times as high as a passenger car)



GHG savings if entire Canadian school bus fleet is replaced with electric

1.5 million tonnes CO₂e/year



Charging location

Charges overnight at a centralized depot



Average distance travelled daily

80-200 km



Time to charge

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



Cost to buy now

Approximately 3 times as expensive as a diesel equivalent. However, significant funding is available to offset the purchase price, reducing the cost of an electric school bus to the equivalent or less than that of diesel.



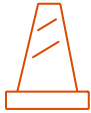
Total lifetime cost by 2030 (without incentives)

Almost cost competitive with a diesel bus



Major North American suppliers

Proterra, Lion Electric, GreenPower, NFI, Blue Bird Corp



Roadblocks

- The purchase price of an electric school bus is three times more expensive than a diesel-fueled school bus, absent of purchase incentives.
- The associated charging infrastructure equipment and installation are an additional upfront expense.
- While the fuel and maintenance savings over the lifetime of the vehicle brings down the expense of an electric school bus, fleet operators may still find it difficult to entirely close the gap between the upfront cost of an electric bus and a diesel-fueled bus.

Key to acceleration

Simplifying the funding application process can make financial support more accessible.

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.



Pembina Institute resources

- Electric School Buses: The benefits to British Columbians and options for accelerating the transition
pembina.org/pub/electric-school-buses
- Lion Electric leading the transition to zero-emission vehicles
pembina.org/blog/lion-electric-leading-transition-zero-emission-vehicles


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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