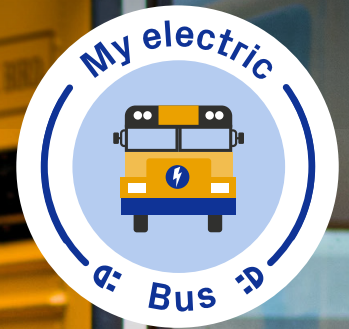


Costs and Depreciation

Fact Sheet



This campaign is made possible thanks to support from:

Although they are 2 to 3 times more expensive to purchase initially, electric school buses benefit from purchase subsidies as well as significant savings on energy and maintenance costs, which can make their cost comparable to that of a diesel bus. The key elements of the total cost to consider are as follows:

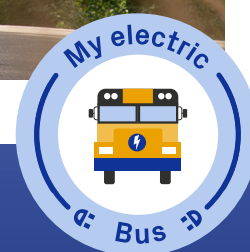
- Amortization of acquisition cost
- Training and labour costs
- Energy costs
- Maintenance costs

Amortization of acquisition cost

Despite the fact that this cost is higher for an electric school bus, it is important to consider depreciation over the entire life of the vehicle as well as savings that can be made on energy, maintenance and labour costs. When purchasing an electric school bus, it is important to select a model appropriate to actual needs. It is especially important to validate the need for range (see the fact sheet on [Range](#)) because the cost of the vehicle varies greatly between a bus with a range of 120km and one with a range of 250km.

Currently, in Quebec, it is advantageous to make the transition because the provincial government provides \$150,000 in financial assistance for the purchase of new all-electric Type A, C or D school buses. As of April 1, 2022, this subsidy will reduce to \$125,000 and then to \$100,000 as of April 1, 2023, until March 31, 2024. [Click here to find out more about the program.](#)

Also, the Federal Government has made changes to its Capital Cost Allowance (CCA) rules to allow an increased first-year CCA rate on the purchase of zero-emission vehicles (including electric school buses.) [Click here to find out more about this measure.](#)



Training and labour costs

For this factor, there is no difference based on the type of engine: this component therefore is the same as that associated with diesel-powered vehicles. However, minimal costs need to be allocated for driver training (a few hours) in the operation of electric vehicles. Training required for mechanics will need to be more extensive, but amortized over a large number of vehicles.

Energy costs

The first energy-related cost relates to the acquisition of charging infrastructure. The cost per station can vary significantly depending on the type of installation and the type of charging station. On average, the cost to purchase and install a Level 2 charging station is approximately \$6,500, and approximately \$9,000 for a Level 2 smart charging station.¹ However, the lifespan of the station should exceed that of the bus.² This cost can be reduced thanks to a provincial government subsidy program.

The provincial government is offering a subsidy equal to 75% of eligible expenses for the purchase and installation of a charging station with the purchase of an electric school bus.

[Click here to find out more about this Ministère des transports program.](#)

Operating costs are tied to energy and power. In the case of energy, an average energy cost should be considered, and this can be optimized based on the way the vehicles are used, as well as any power costs, which can be minimized through various power-management solutions (see fact sheet on [Charging](#)).

For example, the energy cost to travel 100 km is about 2 to 3 times lower, or close to \$10, for an electric bus, as opposed to \$30 for a diesel-powered bus (see table below). Also, electricity costs are predictable in the short and medium term, whereas diesel prices fluctuate over time, even within the same year.

Maintenance costs

Maintenance requirements for electric buses are lower for major components, i.e. engines and brakes. Although no long-term data are available, costs are estimated to be 30-50% lower than for diesel buses (\$10-12 per 100 km, versus \$19 per 100 km).³

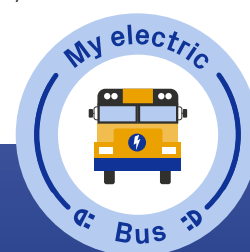
In addition, the fact that oil changes are not required and there are no diesel-related mechanical parts or anti-pollution devices (requiring urea) results in reduced maintenance frequency and costs.



1. The approximations of installation costs are derived from data supplied by the Ministère de l'Énergie et des ressources naturelles under its program entitled *Branché au travail* and experiments by various experts from the school sector.

2. Even under optimal conditions, the lifespan can vary depending on how they are used (whether or not they are sheltered, the cable is dragged in the snow, etc.) and the obsolescence of the technology.

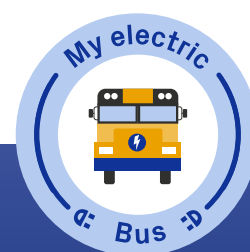
3. Morin, P., M.-H. O. D'Amours et L. Balthazar. *Électrification des transports collectifs au Bas-Saint-Laurent*. Conseil régional de l'environnement du Bas-Saint-Laurent, 2017, 68 p..



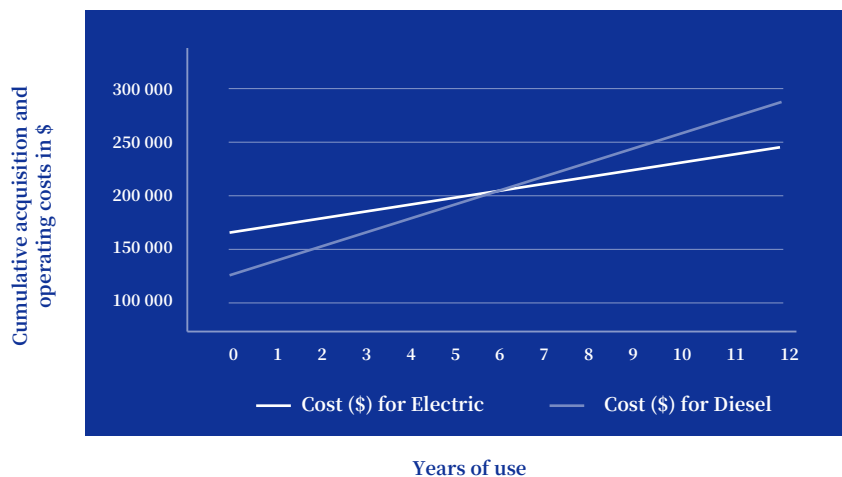
Comparison of purchase and operating costs

For a Type C bus travelling 24,000 km per year with a 150-km battery.

	Electric Bus	Diesel Bus
Purchase cost		
Purchase price of bus	\$310,000	\$130,000
Cost of charging infrastructure (installation and terminal)	\$13,200 ⁴	-
Residual (resale) value	\$2,000 ⁵	\$2,000
Acquisition cost (before subsidy)	\$321,200	\$128,000
Government subsidy on vehicle purchase	\$150,000	-
Government subsidy for charging infrastructure (Level 2 smart terminal) ⁷	\$6,750	-
Acquisition cost (with subsidy)	\$164,450	\$128,000
Annual cost of operation (24,000 km)⁸		
Energy		
Energy consumption	0.87 kWh/km	0.33 L/km
Energy cost	\$0.10/kWh ⁹	\$1.15/L ¹⁰
Annual energy cost	\$2,088	\$9,108
Annual heating cost ¹¹	\$2,172	-
TOTAL: Annual energy cost	\$4,260	\$9,108
Maintenance		
Cost of maintenance	\$0.11/km	\$0.19/km
TOTAL: Annual cost of maintenance	\$2,640	\$4,560
TOTAL: Annual cost of operation	\$6,900	\$13,668
Expenditures after 12 years	\$247,250	\$292,016
Savings after 12 years	\$44,766	



After approximately 5 years of in-service operation, an electric school bus will have amortized the cost differential, and by the end of its useful lifespan (12 years) will have accumulated savings of approximately \$45,000, compared with its diesel counterpart, as a result of lower operating costs.



4. Average cost of a Level 2 smart station (\$5,000) including telecommunications costs and costs to monitor management of the station (approx. \$350/year over 12 years) with a simple type of installation (\$4,000).
5. This resale value is very conservative. The battery is certainly worth more than this.
6. Only from April 1, 2021 to March 31, 2022, then decreases to \$125,000 from April 1, 2022 to March 31, 2023 and to \$100,000 from April 1, 2023 to March 31, 2024.
7. The amount of this provincial subsidy equates to 75% of the purchase and installation cost of a Level 2 smart charging station with basic installation, estimated in this case at \$9,000.
8. Équiterre, 2019. *Autobus scolaires électriques: Impulser leur déploiement au Québec.*
9. This cost per kWh is valid in a context where the charging stations are wired into the building and there are other sources of consumption leading to a higher level of power usage. For a dedicated charging infrastructure line, a cost of \$0.14/kWh can be expected.
10. Average price of diesel for the period March 2020 to March 2021 for Quebec. Natural Resources Canada.
11. For diesel heating systems on Lion electric buses, using 2.95 L/hour, operating 4 hours a day for 8 months at a cost of \$1.15/L.

