

Electric vehicle charging

Three types of charging

- 1) **Level 1 charging** is done using a conventional 120-V AC electrical outlet, like the home outlets most electrical appliances plug into. Plug-in electric vehicles (PEVs) are equipped with a mobile charging cable for this type of connection.
- 2) **Level 2 charging** uses a 240-V AC home plug-in station installed by a master electrician or one in the Electric Circuit public charging system.

All PEVs sold in North America are equipped with a standard connection for 120-V and 240-V charging.

- 3) **Quick charging** is done with a high-power DC station of 400 V or more. So far, the Electric Circuit is the only public system in Québec to offer this type of charging, which can only be used by certain all-electric vehicles.

The average time it takes to fully charge an EV battery

	Level 1 charging (120 volts)	Level 2 charging (240 volts)	Quick charging (400 volts or higher)
Type of charge	Full charge	Full charge	80% of a full charge
Plug-in hybrid	6 - 8 hr	3 - 4 hr	-
All-electric vehicles	16 - 24 hr	6 - 8 hr	About 30 minutes in optimal conditions*

* Optimal conditions: above 15°C and a low initial charge. In cold temperatures, it can take significantly longer to charge an EV battery at a 400-V charging station. The quick-charging time depends on the battery's initial charge and temperature as well as the outdoor temperature.

Answers to the most frequently asked questions about charging electric vehicles

Q: Can any electric vehicle use a fast-charge station?

A: Only all-electric vehicles with the quick-charge option are designed to accept a fast charge.

Can accept a fast charge	Cannot accept a fast charge
All-electric vehicles equipped with a quick-charge connection (or, for the Tesla, an adapter as of 2014)	Plug-in hybrid vehicles, extended range electric vehicles and certain types of all-electric vehicles that do not have that option
To date, approximately 500 vehicles registered in Québec	To date, approximately 1,600 vehicles registered in Québec
Models sold in Canada <ul style="list-style-type: none"> • Mitsubishi i-MiEV (series) • Nissan Leaf (series, SV and SL models) 	Models sold in Canada <ul style="list-style-type: none"> • Tesla Model S (quick-charge adapter available in 2014) • Ford Focus • Ford C-MAX • Ford Fusion • Plug-in Toyota Prius • Chevrolet Volt • Fisker Karma • Smart Fortwo Electric Drive

Q: Can a full charge at a quick-charge station take less than 30 minutes?

R: In ideal conditions (mild temperature above 15°C and a low initial charge), a fast charge to 80% will take only about 30 minutes for an all-electric vehicle. However, in cold weather, it may take significantly longer.

Q: Is a 90-A (ampere) station a quick-charge station?

R: No, 90-A stations are Level 2, 240-V stations. Charging time depends mainly on the vehicle, then on the plug-in station. With the exception of the Tesla, which can accept 90 A, PEVs on the market can only take 15 or 30 A, depending on the model.

So an electric vehicle other than a Tesla, for instance a Ford Focus able to accept 30 A, will not charge more quickly with a 90-A station. Also, it will take less time to charge a Tesla on a 30-A station than on a 90-A station.

Q: Why aren't fast-charge stations being installed throughout Québec instead of 240-V charging stations?

R: Only some models of all-electric vehicles (Nissan Leaf and Mitsubishi i-MiEV) are designed for quick charging and would benefit from such stations. Right now, less than a quarter of EVs on our roads (509 out of 2,100) fall into that category. Quick-charge stations are also much more expensive than 240-V charging stations.