

Types of Charging Options for Electric Vehicles (EVs)

One of the most important aspects of Electric Vehicles (EVs) is understanding their charging options. Whether you're looking to charge at home or on the go, understanding the available options will ensure that you have an enjoyable electric driving experience.

Frequent Questions	Levels of Charging		
	Level 1 Charging	Level 2 Charging	DC Fast Charging (Direct Current Fast Charging)
Range provided per charge	Provides roughly 4 miles of range per hour of charge	Provides up to 25 miles of range per hour of charge	Provides an 80% charge in about 40 minutes
Availability at home	Most EVs come with an adaptor that can be used with standard 120V outlets	Level 2 charging is available in your home with installation from a certified electrician*	Not used at home.
Where is this used?	Used at home and other locations with long dwell times (e.g., offices, parking garages, areas with overnight parking, etc.)	Commonly used for public, work, or home charging	Typically located along major highway corridors.
How is this used?	Can be plugged directly into a standard 120-volt outlet; no additional equipment is required though dedicated Level 1 charge stations are available.	Installation recommended using a certified electrician. * Some upgrades may be required to support Level 2 charge stations - see your certified electrician for more information.	Requires dedicated location with appropriate power infrastructure support.
Connector Needed	J1772 connector*	J1772 connector*	<ul style="list-style-type: none"> - Combine Charging System (CCS) connector. Can also be used for Level 1 and 2 charging. - Charge the Move (CHAdeMO) connector. Primarily utilized by Japanese automakers - Tesla connector

*You can find more information on charging connectors at [ChargeHub.com](https://www.chargehub.com)

Charging at Home or On the Go?

Electric Vehicles (EVs), unlike traditional gas-powered cars, can be charged both at home and on the go. Choosing between one or the other involves balancing factors such as convenience, cost, and speed. Home charging is convenient, cost-effective, and reliable for daily use, while on the go charging offers faster charging options, which can be important during longer travel trips.

Aspect	Charging at Home	On the Go Solutions
Convenience	<ul style="list-style-type: none"> ● Plug in while you sleep. ● Provides flexibility. ● Hassle-free integration into daily routine. 	<ul style="list-style-type: none"> ● Adaptability as you travel. ● May require account registration to use certain systems. ● Utilize apps like PlugShare for real-time charger availability.
Cost	<ul style="list-style-type: none"> ● No need for subscriptions ● Can utilize lower residential rates with utility programs that offer off-peak rates to charge ● Can use existing outlet 	<ul style="list-style-type: none"> ● Various plans offering up to 30% savings ● Provides access to charging without home ownership or dedicated parking ● Flexible pricing that can offer savings in certain locations
Charge Speed	<ul style="list-style-type: none"> ● Level 2 charging systems provide a rate of up to 25 miles per hour. ● Vehicles parked at home for extended periods (typically 4 hours or more) can accommodate the slower charging speeds effectively. 	<ul style="list-style-type: none"> ● Faster charging at specific stations (up to 80% recharge in 40 minutes at DCFC stations). ● Fast chargers can reduce charging time significantly, making travel more efficient.
Infrastructure	<ul style="list-style-type: none"> ● Level 1 charging with a standard 120-volt outlet. ● Level 2 charging requires certified electrician installation. 	<ul style="list-style-type: none"> ● Utilizes an expanding public charging infrastructure.
Environmental Impact	<ul style="list-style-type: none"> ● Contributes to a lower environmental impact. ● Has the potential for renewable energy use. ● Promotes sustainability through clean energy use. ● Reduces the carbon footprint in public charging stations. 	

Regenerative Braking

EVs feature regenerative braking that captures a vehicle's forward motion and converts it into electricity to charge the battery as it slows down and comes to a stop. The electric motor performs dual functions. It operates as a generator during regenerative braking and also assists in slowing the vehicle. This process is initiated when the vehicle's wheels, while in motion, turn the axle connected to the electric motor, thereby generating energy.

To activate regenerative braking, simply *lift off the accelerator* or *press the brake pedal*. Some cars even have a paddle near the steering wheel for activation*.

In traditional braking, energy is lost as heat due to friction, making it highly inefficient. Regenerative braking addresses this issue by capturing over 70% of the kinetic energy lost during braking.

This mechanism not only extends the vehicle's range but also reduces the frequency of service center visits. Additionally, some EVs can go around 100,000 miles between brake services.

- <https://www.energy.gov/energysaver/how-regenerative-brakes-work>