



A Resident's Guide to Hybrid and Electric Vehicles



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A Resident's Guide to Hybrid and Electric Vehicles (EVs)

This guide explains the basics of owning a hybrid electric vehicle (HEV), plug-in hybrid electric vehicle (PHEV), or battery electric vehicle (BEV) in Stratford, Ontario. It provides general information, what to consider before buying, local charging information, and practical tips for decision-making and everyday use.

Quick Definitions

- HEV (hybrid electric vehicle): Uses gasoline and a small battery. It cannot be plugged in.
- PHEV (plug-in hybrid electric vehicle): Uses electricity for shorter trips and gasoline for longer trips. It can be plugged in.
- BEV (battery electric vehicle): Runs only on electricity and must be plugged in to charge.

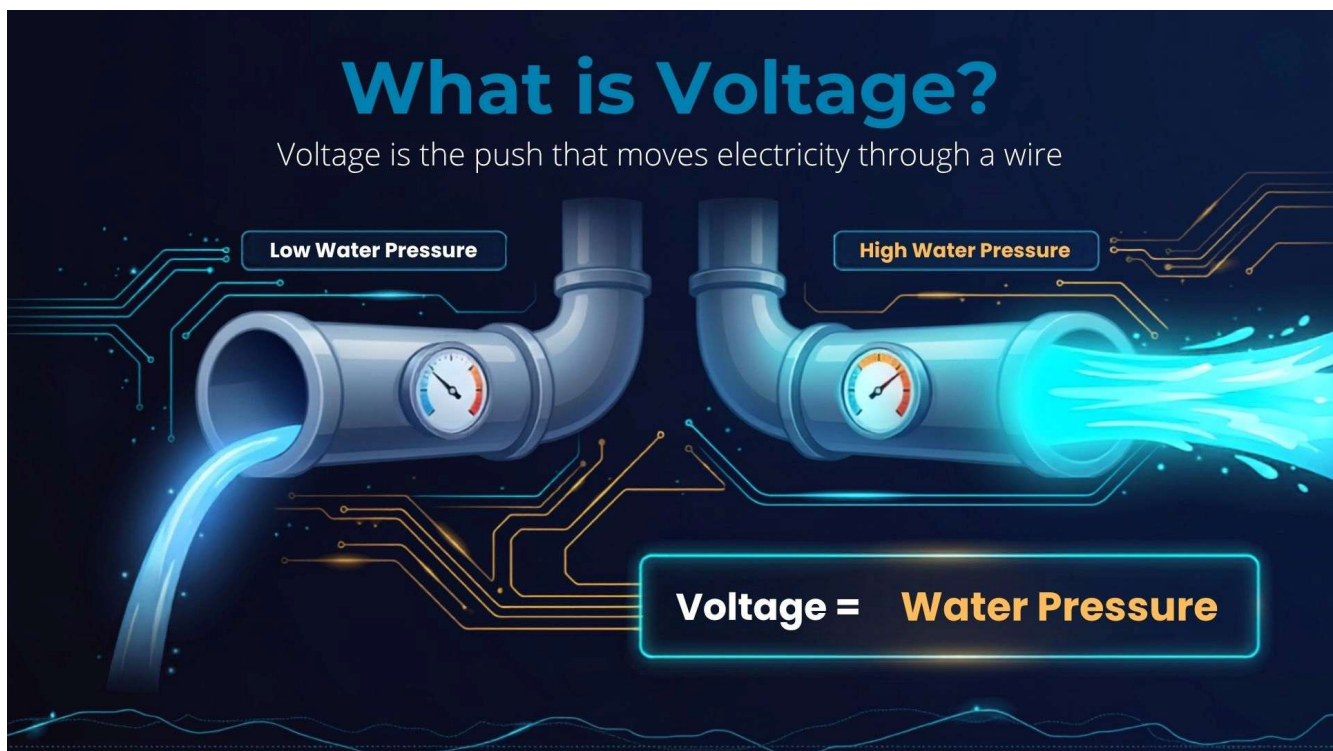
Table 1 Types of Electric Vehicles

Type	Best for	Needs charging?	Gas engine?	Example
HEV	Drivers who want better fuel use without changing habits	No	Yes	Toyota RAV4 Hybrid, Honda Accord Hybrid
PHEV	Drivers who want electric driving plus gas backup	Yes	Yes	Ford Escape Plug-in Hybrid, Mitsubishi Outlander PHEV
BEV	Drivers who can charge at home or regularly in public	Yes	No	Kia EV9, Chevrolet Equinox EV

Charging Basics

Understanding voltage

Voltage is the “push” that moves electricity through a wire. One simple way to picture it is to think of electricity like water moving through a pipe: voltage is similar to water pressure. Lower voltage provides a gentler electrical flow, while higher voltage provides a stronger flow.



How this applies to EV charging

A standard 120-volt household outlet is used for many everyday items, such as lamps and small chargers, and can support Level 1 EV charging. A 240-volt setup, similar to what is used for larger appliances such as ovens or dryers, supports faster Level 2 charging. Many EV owners do most of their charging at home, choosing either Level 1 or Level 2 depending on their vehicle, daily driving needs, and available electrical setup.

How long does charging take?

Charging times of Level 1 and Level 2 EV chargers range from less than 4 hours up to 16 hours or more based on the battery size, charger power, the vehicle's maximum charging rate, outside temperature, and how full the battery already is.

BEVs typically have more battery capacity than PHEVs, so charging a fully depleted BEV takes longer than charging a fully depleted PHEV.

- Level 1 is the slowest. It may be enough for a PHEV or for a BEV with short daily trips.
- Level 2 is much faster and is often the best choice for home charging. It is also the most common type of charger available publicly.
- DC fast charging is mainly for public stations. Many vehicles charge quickest from low battery to about 80%, then slow down to protect the battery.

Table 2 Levels of charging currently available

Charging type	Typical voltage	Typical use	Typical full charge time	Best fit
Level 1	120 V	Standard outlet at home	About 8 to 50+ hours (About 5 to 8 km of range per hour)	May work for some PHEVs and low-mileage BEVs
Level 2	240 V	Home charger, workplaces, public lots	About 4 to 10 hours (About 35 km of range per hour)	Best choice for most BEV owners and many PHEV owners
DC fast charging	High-voltage DC public charger	Highways and quick top-ups	Very fast; depends on the car and charger. About 25 to 30 minutes to around 80% on compatible vehicles	Road trips and quick public charging

Plug types

EVs do not all use the same plug. The plug type affects where you can charge and whether you may need an adapter. A good, approved adapter will often let charging work normally, but adapters can affect:

- Which chargers you can use
- Charging speed
- Reliability
- Safety
- Weather resistance and fit
- Warranty or manufacturer support

The most common public EV charging plug in Canada is **J1772** for regular Level 2 charging. For DC fast charging, **CCS** is still very common, while **NACS** is becoming more important as more vehicles and networks adopt it.

- **J1772**

This is a common plug for **Level 1 and Level 2 charging**. It is often used for charging at home, at work, or at public chargers.

- **NACS (North American Charging Standard)**

This is the plug used by **Tesla** and is becoming more common on other EVs. Some non-Tesla vehicles can also use it with the right adapter.

- **CCS (Combined Charging System)**

This plug is often used for **fast charging** at public stations. Many non-Tesla EVs use CCS for road trip charging.

- **CHAdEMO (CHARge de MOve)**

This is an older fast-charging plug. It is less common now and is mostly found on some older EV models.

What does faster home charging require?

- A 240-volt Level 2 charger
- A dedicated electrical circuit
- Enough room in the electrical panel, or other electrical upgrades if needed
- Installation by a licensed electrician

The Electrical Safety Authority (ESA) advises using approved charging equipment and proper installation.

What Is Electrical Load?

Electrical load is the amount of power a device or system needs. For EV charging, it means the electricity the charger draws from the grid. Calculating this load helps show whether your home's wiring, breaker panel, and utility connection can safely support an EV charger.

What does home charging cost?

There are two parts to cost:

1. Electricity cost: Charging at home is often one of the most affordable ways to power an EV. The cost depends on the home's electricity plan, the time of day, and the vehicle.
2. Equipment and installation cost: There is no single set price. The final cost depends on the charger, the distance from the electrical panel, and whether the home needs panel or wiring upgrades.

The Ontario Energy Board (OEB) says households can choose between Tiered, Time-of-Use, and Ultra-Low Overnight pricing. The Ultra-Low Overnight period runs from 11 p.m. to 7 a.m. every day and may work well for overnight charging.

In Stratford, the electricity-only cost to fully charge an EV at home can range from about **\$2.34 to \$23.46 for a 60 kWh charge**, depending on the household's electricity

price plan and when the vehicle is charged. Overnight charging on the Ultra-Low Overnight plan is typically the least expensive option.

[See here for Stratford electricity rates.](#)

Public Charging in Stratford

Residents should always check live station status before leaving. Public charging information can change without notice.

Figure 1 Popular EV Charging Stations in Stratford



Market Place



Albert Lot



Upper Queens Park



30 York Street

Paid City of Stratford charging

The following are [City-owned charging locations](#):

- Market Place
- Kalbfleisch Lot, 128 Erie Street
- Albert Lot, 18 Albert Street
- Erie Lot, 91 Erie Street
- York Lot, 30 York Street
- Upper Queens Park

City rates in effect since September 1, 2025:

- Level 2 charger: \$2.50 per hour
- Level 3 fast charger: \$16.50 per hour
- At City-owned stations, a separate parking payment is not required while using the charger.
- Payment can be made through the ChargePoint app or by credit card.

Other paid public charging in Stratford

- Canadian Tire, 1093 Ontario Street: ChargeHub lists Level 2 charging at \$1.50 per hour and Level 3 charging at \$20.00 per hour.

Private site prices and access rules can change. Drivers should confirm details in the network app before charging.

Examples of free or no-fee charging listed in Stratford

Some Stratford chargers at private sites are listed as free in public charging maps. These listings are not the same as a City guarantee and may change. Drivers should confirm access, hours, and costs in the app before travelling.

- Stratford Honda, 3018 Ontario Street: ChargeHub lists free Level 2 and Level 3 charging.
- Ideal Supply, 400 Lorne Avenue East: ChargeHub lists free Level 2 charging.

Helpful Apps and Tools

- [ChargePoint](#): Useful for City of Stratford chargers and many other public stations. The app can show station maps, pricing, and payment options.
- [FLO](#): Useful for finding FLO chargers, checking status, and managing some home chargers.
- [ChargeHub](#): Useful for comparing many public stations in one map across networks.
- [PlugShare](#): Widely used station locator recommended in Canadian EV education materials.
- [Tesla app](#): Useful for Tesla charging and for some non-Tesla drivers at Tesla Destination Charging sites.

- [Natural Resources Canada station locator](#): Useful for finding charging and alternative fuel stations across Canada.

Range and Weather

How far can an EV go on a charge?

It depends on the vehicle. CAA says many fully electric vehicles now offer about 200 to 600 km of range, depending on the model and driving conditions. PHEVs have shorter electric-only range, but they can switch to gasoline when needed.

Does winter affect range?

Yes. Cold weather can reduce EV range.

Natural Resources Canada says EVs can lose about 25% to 30% of range in extreme cold. The Canadian Automobile Association's (CAA) Canadian winter testing found that some vehicles lost even more in real-world conditions, depending on the model and weather. Charging can also be slower in very cold weather.

This does not mean EVs do not work in winter. It means winter planning is important.

Winter tips

- Pre-heat the vehicle while it is still plugged in, if the vehicle allows it.
- Use winter tires and keep tires properly inflated.
- Plan longer winter trips with extra charging time.
- Do not arrive at a charger with too little battery in severe cold, if possible.
- Expect more energy use when using cabin heat, defrost, and heated seats.

Used vs. New EVs

A used EV can cost less up front, but it is important to check more than the sale price.

What to check on a used EV

- Battery warranty remaining
- Vehicle history report
- Service records
- Real-world range compared with current needs
- Whether the right charge port and adapters are included
- Whether the vehicle can use fast charging, and at what speed
- Overall condition, including tires, brakes, and software or recall history

A new EV may offer the latest battery technology, the longest range, and a full warranty. A used EV may be a good fit for short daily driving, second-car use, or households with reliable home charging.

Maintenance

BEVs usually need less routine maintenance than gasoline vehicles because they have fewer moving parts and do not need oil changes. According to the Canadian Automobile Association (CAA), BEV owners save about 40% to 50% in maintenance on average compared with gas vehicles. Even so, regularly check:

- Tires
- Brakes
- Wiper blades and washer fluid
- Cabin air filters
- Suspension and steering checks
- Manufacturer software updates and recall checks

HEVs and PHEVs still have gasoline engines, so they also need engine-related maintenance such as oil changes and other scheduled service listed by the manufacturer.

Insurance in Ontario

Ontario's standard auto insurance rules apply to HEVs, PHEVs, and BEVs. There is no separate mandatory insurance system just for electric vehicles.

In Ontario, auto insurance is required by law. Mandatory coverage includes third-party liability, accident benefits, uninsured automobile coverage, and direct compensation property damage only if the driver chooses to buy that optional coverage under current Ontario rules.

The cost of insurance depends on many factors, including the make, model, year, where the driver lives, driving record, annual kilometres, and selected coverage.

Drivers should ask insurers whether they offer EV-related discounts, but discounts are not guaranteed and vary by insurer.

Because repair costs can differ by model, it is wise to get an insurance quote before buying any HEV, PHEV, or BEV.

Incentives

Federal incentives

The Government of Canada's Electric Vehicle Affordability Program (EVAP) helps Canadians buy or lease lower-cost electric vehicles by providing incentives for eligible purchases or leases with a final transaction price of \$50,000 or less. This price cap does not apply to electric vehicles manufactured in Canada.

To be eligible, vehicles must be built either in Canada or in a country that has a free trade agreement with Canada. Available incentives begin at:

- up to \$5,000 for battery-electric and fuel cell electric vehicles
- up to \$2,500 for plug-in hybrid electric vehicles

Canadians have been able to access the program since February 16, 2026. The federal EVAP applies to **new vehicles only; pre-owned EVs are not eligible**.

Program timing and incentive changes

[EVAP](#) is scheduled to run from March 31, 2026 to March 31, 2031, or until the available funding has been fully allocated. Incentive amounts are expected to decrease over time. This phased approach is intended to help consumers plan purchases while reducing market disruption as the program winds down in 2031.

Incentives will be issued on a first-come, first-served basis.

Ontario incentives

Currently, Ontario does not have a general provincial rebate for personal EV purchases or home charger installation. However, the province does offer the Green License Plate Program. Eligible vehicles with an Ontario green license plate can use:

- High-Occupancy Vehicle (HOV) lanes with any number of occupants, including just the driver
- High-Occupancy Toll (HOT) lanes on 400-series highways and the QEW at no cost, also with any number of occupants

Because programs can change, residents should check official websites before buying a vehicle or charger.

Emissions

BEVs produce no tailpipe emissions. PHEVs can also operate with no tailpipe emissions while driving in electric-only mode, but only until their usable battery charge is depleted or when the vehicle otherwise switches on the gasoline engine. HEVs are not zero-emission vehicles; they still use gasoline and produce tailpipe emissions, though they typically emit less than comparable conventional gasoline vehicles because they use fuel more efficiently.

See below a comparison between similar car models of the same brand:

Table 3 BEV, PHEV and HEV Comparison

	BEV	PHEV	HEV
Car Make/Model	Kia Niro EV (SUV)	Kia Niro Plug-in Hybrid (SUV)	Kia Niro (SUV)
Consumption (City & Highway)	2.1 L _e /100 km	2.1 L _e /100 km	4.8 L/100 km
		4.7/4.9/4.8 L/100 km	
Co₂ Emissions	0 g/km	42 g/km	112 g/km
Annual Fuel Cost	\$670	\$957	\$1440
Smog Rating	10	6	6

Note: For fair comparison, electricity use is shown as gasoline litres equivalent per 100 kilometres ($L_e/100$ km). This means the chart shows how much energy the vehicle uses in a way that is easier to compare with gasoline vehicles. The smog rating shows how much smog-forming pollution comes from the vehicle's tailpipe. The rating goes from 1 to 10. A score of 1 is the worst, and a score of 10 is the best.

Check out Natural Resources Canada's [fuel consumption ratings search tool](#) and the [2026 Fuel Consumption Guide](#) before you buy an EV or to compare your current vehicle.

Frequently Asked Questions

Is a hybrid the same as an EV?

No. A hybrid (HEV) usually cannot be plugged in. A PHEV plugs in but also uses gasoline, while a BEV runs entirely on electricity. They are powered by motors that draw electricity from on-board storage batteries. PHEVs do not have to be plugged in but will be more fuel-efficient and have a longer driving range if they are.

Is a 120-volt outlet enough?

Sometimes. It may be enough for a PHEV or a BEV with short daily driving. Many BEV owners prefer Level 2 charging at 240 volts for faster overnight charging.

Does public fast charging damage the battery?

Occasional fast charging is normal, but many drivers use home charging most of the time and public fast charging when they need a quicker top-up. Following the vehicle maker's guidance is the best approach.

Can an EV be used in winter in Ontario?

Yes. Many people drive EVs year-round in Ontario. Winter usually means less range and slower charging, so trip planning matters more.

Is a used EV risky?

Not always. The main checks are battery warranty, condition, charging speed, range, and service history.

Will an EV save money?

It may save money on fuel and maintenance, but the total result depends on the purchase price, insurance, annual driving, and charging habits.

What if home charging is not possible?

A BEV may still work if public or workplace charging is reliable, but a PHEV or HEV may be easier for households without dependable charging access.

Recommendations for Stratford Residents

- Match the vehicle to daily driving needs, not just the longest trip of the year.
- If buying a BEV, plan for reliable home, work, or public charging before purchase.
- If daily driving is modest and charging access is limited, a HEV or PHEV may be easier to own.
- For most homeowners who want a BEV, a 240-volt Level 2 charger is currently the most practical long-term setup.
 - Understanding your home's electrical load can help to determine whether panel upgrades are necessary. Residents with a Festival Hydro account can request for this record directly before speaking with an electrician.
- Check whether the vehicle has a native NACS port or needs an adapter
- Before installing a charger, get quotes from licensed electricians and ask about panel capacity, wiring route, and permit requirements.
- Before buying any electrified vehicle, compare insurance quotes and check local public charging options in apps.

Sources

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- CAA driving and charging: <https://evbuyersguide.caa.ca/content/charging>
- CAA EV Buyer's Guide: <https://evbuyersguide.caa.ca/>
- CAA EVs in winter: <https://evbuyersguide.caa.ca/content/evs-in-winter>
- CAA North & East Ontario: Considering an electric vehicle?: <https://caaneo.ca/magazine/drive/5-questions-about-electric-vehicles/>
- ChargeHub Stratford charging map: <https://chargehub.com/en/countries/canada/ontario/stratford.html>
- ChargePoint driver app: <https://www.chargepoint.com/en-ca/drivers/mobile>
- City of Stratford parking and EV charging: <https://www.stratford.ca/live-here/parking/>
- Electrical Safety Authority: EV charging systems at home: <https://esasafe.com/assets/files/esasafe/pdf/Homeowner/EV-charging-stations-at-home.pdf>
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- Ontario Energy Board: Choosing your electricity price plan: <https://www.oeb.ca/rates-and-your-bill/electricity-rates/choosing-your-electricity-price-plan>
- Ontario Energy Board: Electric Vehicles (EVs): <https://www.oeb.ca/consumer-information-and-protection/electric-vehicles-evs>
- Ontario energy snapshot — Government of Ontario
URL: <https://www.ontario.ca/page/ontario-energy-snapshot>
- Ontario government: Charging electric vehicles: <https://www.ontario.ca/page/charging-electric-vehicles>

- Ontario government: Low-carbon vehicles and electric vehicles: <https://www.ontario.ca/page/low-carbon-vehicles-and-electric-vehicles>
- Tesla Destination Charging: <https://www.tesla.com/support/charging/destination-charging>
- Transport Canada: EV Affordability Program vehicle list: <https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/electric-vehicle-affordability-program-evap/evap-vehicle-list>

EV Chargers at a glance

COST

Upfront costs:
\$-\$\$\$\$

IMPLEMENTATION

Easy to difficult

RENTERS

Talk to your property owner about EV charging

CHARGING SPEED

10-13 years

EMISSIONS REDUCTION IMPACT

Very high

CHECK

The connector type and charging power

ELECTRICAL NEEDS

120V 15 amp to 240V 100 amp

BONUS

Power appliances or your home during a power outage with EVs capable of V2L, V2H or V2G

Links to further resources

- [Guide to home EV charging](#)
- [Vehicle-to-load Explained](#)

9.

EV Chargers

“

You have to have a better car. It's not just the ideological decision of buying an EV. It's about buying a better car.

—
author unknown

The easiest way to keep an electric vehicle (EV) charged up and ready to go is by using a home charging station. This is also the lowest cost option, especially when owners can take advantage of low time-of-use rates available in some provinces.

North American EVs can have a variety of connectors for charging. Most new vehicles

come with a NACS (North America Charging Standard, also known as SAE J3400) connector that is used for level 1, 2 or 3 charging.

Some vehicles will have an SAE J1772 connector for level 1 or 2 charging and a second connector for level 3 fast charging. The second connector will be either CCS or CHAdeMO.



J1772



CCS



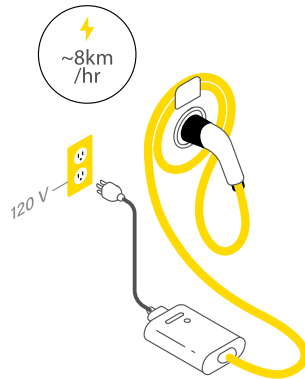
Chademo



Tesla/NACS

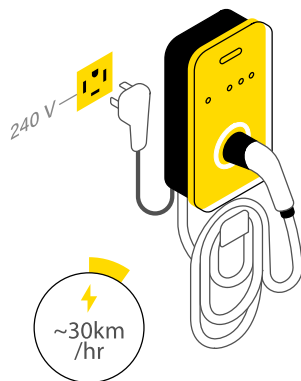
OPTIONS

Level 1:



You absolutely can charge your EV or plug-in hybrid using your portable EV charging cord plugged into a standard household outlet. You can charge your car just about anywhere with an electrical outlet. This is the slowest speed of charging, achieving approximately 8 km of driving range for every hour of charging, but it is also ridiculously cheap relative to gasoline or public charging. With overnight charging letting you drive more than 60 km, this may be all you need.

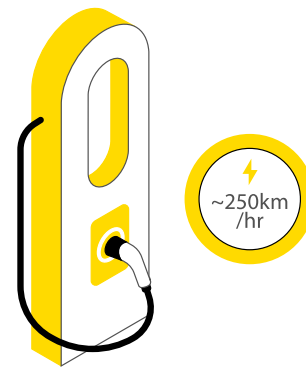
Level 2:



For speed and convenience, you may want to invest in a level 2 home charger. These chargers can be hard-wired into your home or use a 240V outlet. Once it is there, you can get an average of 30 km of driving range for every hour of charging at very low cost. Level 2 chargers come with different power outputs (in amp ratings), and

some allow you to set the power output. In general, the higher the power output, the faster the charge, but not all EVs can benefit from higher power outputs, and lower power systems leave electrical panel space for other electrification projects.

Level 3:

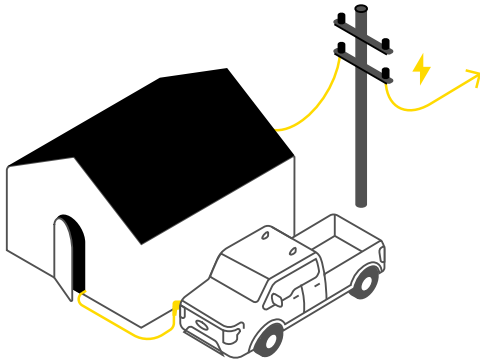


For fast charging while on the go, look for public level 3 chargers. These are not suitable for home installs because they require very high amperage to supply the power needed.

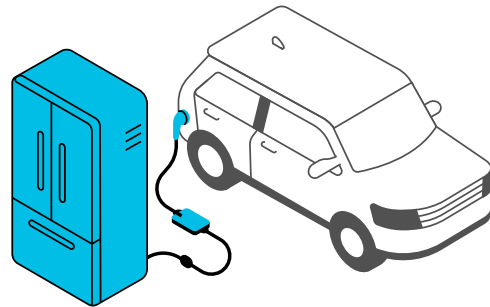
EV CHARGERS

EV CHARGER FEATURES

Equipment	Purpose	Charging speed	Outlet	Upfront cost	Operating cost	Emissions
Level 1 charging cable	Charging EV	~8 km/hr	120V 15 amp	Up to \$\$	▼	▼
Level 2 charger	Charging EV	~30 km/hr	240V 20-60 amp	\$\$	▼	▼
Bidirectional charger	Charging EV/ vehicle to grid	~30 km/hr	240V 20-100 amp	\$\$\$-\$\$\$\$	▼	▼
Vehicle to load	Powering appliances	N/A	none		N/A	▼
Vehicle to home (vehicle to load)	Powering a home	N/A	Manual transfer switch	\$\$-\$\$\$	N/A	▼

Bidirectional charger for vehicle-to-grid (V2G):

Bidirectional chargers combined with a home energy management system allow electricity to flow from the grid to charge the car's battery, or from the car's battery to your home or grid. Currently very few EVs are capable of V2G, but the number is expected to grow. Bidirectional chargers can save you money on your utility bills when you take advantage of time-of-use rates, and they also replace power generation from some of the dirtiest power plants. During a power outage, bidirectional chargers with a manual transfer switch can be configured to power your home.

Vehicle-to-load (V2L):

Some EVs allow appliances to be plugged into an outlet on the EV or plug into the charging port via an adapter. The appliances then run independently of the electrical grid, which is convenient during a power outage or when camping. See [Section 10](#) for more details.

Vehicle-to-home (V2H) and V2L:

With a manual transfer switch, your V2L- or V2H-capable EV can replace a stand-alone generator when the power goes out. See [Section 10](#) for more details.

OTHER CONSIDERATIONS

- When charging, consider using your EV or charger's timer to program when to charge to take advantage of low time-of-use electricity prices where available.
- Most chargers are designed to charge in a garage or outdoors. While it is fine to charge a vehicle in the elements, it is better to store the charger in a sheltered location.
- Check that the charging cord length is suitable for your charging configuration. If using an extension cord with a Level 1 charger, make sure it is rated for the charging current the car needs.
- Your battery will have a longer life if you maintain the charge between 20% to 80% and if you minimize high speed charging (level 3 and even high-power level 2).
- If electrical work is required, you will generally require an electrical permit. Be sure to always use CSA-certified electrical equipment and hire a licensed electrician when needed. For safety and durability, ask for commercial-rated 240V outlets, which reduce the risk of poor plug connections.
- Consider installing a lower amp level 2 charger or sticking to a level 1 charger to maximize available capacity on the electrical panel for other electrification upgrades.
- If your electrical panel does not have the capacity to add a 240V level 2 charger, consider adding a circuit-pausing or load-sharing device to share the circuit with another appliance such as your dryer or water heater. See [Section 13](#) for details.