EVolved:

Your Electric Vehicle Journey Begins Here

A complete guide for **first-time EV owners**

Disclaimer

The advice included in this guide is intended to help new EV owners have the best experience with their new vehicle. It provides basic information about how EVs operate and how to make the best use of their features and options. This guide is not a replacement for following the advice or instruction provided by vehicle owner's manuals or other documentation created by the manufacturer, or from qualified electricians and EV mechanics. Any mention of specific products or services in this text is not intended to constitute an endorsement or a guarantee of quality.

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Users of this guide are solely responsible to meet all legal and regulatory requirements.

The testimonials and quotes featured in this guidebook were collected through a survey conducted by Clean Foundation, gathering insights and experiences directly from EV owners in Atlantic Canada.

Welcome to the **EV experience.**

EVolved is your trusted resource for owning an electric vehicle (EV). Whether you're new to the vehicle or are already cruising with a few years of experience, this guidebook will help you navigate the road ahead with confidence!

With EV adoption on the rise in Atlantic Canada, it's becoming more important every day to separate fact from fiction. We acknowledge that there's a lot of information (and misinformation) available. That's why this guide was created—to clear up the confusion and streamline your way into the world of EVs. This guidebook covers the journey of EV ownership, including charging advice, road trip planning, maintenance tips and more.

EVolved was made possible through funding from Natural Resources Canada's Zero-Emission Vehicle Awareness Initiative (ZEVAI), under the administration of Clean Foundation. We acknowledge their support in advancing public awareness and understanding of electric vehicles in Atlantic Canada.

Government of Canada / Gouvernement du Canada

Clean Foundation

Clean Foundation would also like to recognize our partners who have made significant contributions to advancing the electrification of Atlantic Canada's transportation network. Their valuable insights have greatly supported the development of this guidebook's content.

Content

Part 01

Why drive an electric vehicle (EV)?

"There's so much to like about driving an electric vehicle—they're quiet, they're smooth and they're so simple to maintain."

What is an **EV?**

For this guidebook, an electric vehicle (EV) is defined as a vehicle that can be plugged in to charge, is powered by an electric motor, can produce zero emissions from the tailpipe while driving and has a regenerative braking feature.

What is regenerative braking?

Regenerative braking lets EVs capture energy when slowing down or braking, converting it into power to recharge the battery. Refer to your owner's manual for vehicle-specific details.

There are two main types of EVs available: battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV), each with distinct features. For the purposes of this guidebook, non-plug-in hybrids or "mild hybrids" are not classified as EVs.

Does this guidebook apply to your vehicle? Let's find out:

Battery-electric vehicle (BEV)
Also known as fully electric, a battery electric vehicle (BEV) is powered entirely by electricity. Its energy is stored in an onboard battery and is charged through external charging and regenerative braking. This electricity is then directed to one or more electric motors, which drive the vehicle forward without relying on gasoline or other fuels.

Plug-in hybrid electric vehicle (PHEV)
A plug-in hybrid vehicle (PHEV) is the middle ground between a BEV and a gas-powered vehicle. It's powered by an electric motor and an internal combustion engine (ICE), which is the engine used in gas-powered vehicles. Once the electric range is used up or during rapid acceleration, heating or air conditioning demands, the engine takes over to power the vehicle. This allows the vehicle to seamlessly switch between electric and gas power for improved efficiency.

Hybrid electric vehicle (HEV)
Not covered in this guidebook, a non-plug-in hybrid vehicle or "mild hybrid" is primarily powered by an ICE in combination with one or more electric motors. They do not plug in to a charger and instead use regenerative braking and the engine as a generator to charge the battery.

Why own an **EV?**

How does an EV compare to your current gas-powered vehicle, and is owning one worth the investment? Are they convenient to charge? Can they fit into your daily routine? Are EVs as eco-friendly as claims suggest? These are all common questions Atlantic Canadians have when weighing their options.

Those who've already made the transition to an EV are likely familiar with many of the following benefits. It's always helpful to reinforce the facts to better understand how your EV is making a difference. This guidebook will show how EVs offer substantial benefits for efficiency, the environment and your wallet, while also transforming the way you drive.

Efficiency benefits

DID YOU KNOW? EVs use energy much more efficiently than gas-powered vehicles. EVs convert about 85% of their battery energy into motion, compared to just 15% for gas-powered vehicles.

To measure energy consumption, traditional gas-powered vehicles use litres per 100 kilometres (km) while EVs use kilowatt-hours (kWh) per 100 km.

You can think of kWh as the electric equivalent to litres of fuel. A gas-powered vehicle has a fuel tank that can store so many litres of fuel and an EV has a battery that can store so many kWh of energy.

Let's crunch the numbers and compare the distance travelled between a gas-powered vehicle and its electric counterpart using the same costs.

How far does $1.70 get you?

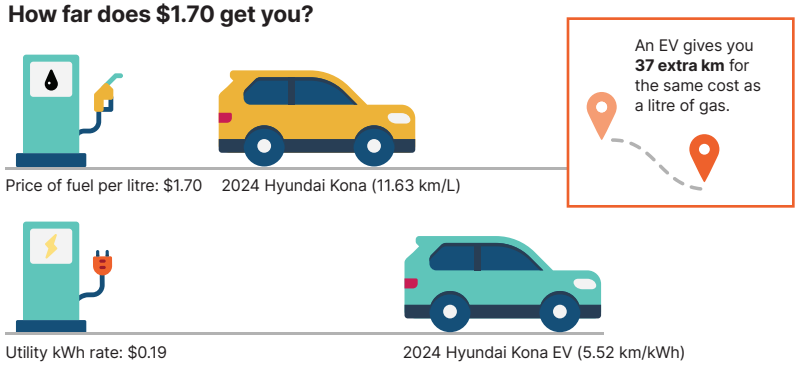


Figure 1: Cost Efficiency: Distance Covered by Gasoline vs. Electricity for $1.70. Data sourced from takeCHARGE! Fuel Savings Calculator. Image by Clean Foundation.

Since EVs don't burn fuel, there's no energy loss when converting heat to motion. While they still lose energy, a good portion of it is recaptured through regenerative braking and fed back to the battery.

Economic benefits

The upfront costs of an EV may seem high, but the real savings kick in once you own an EV, as the total cost of ownership (TCO) is significantly lower compared to gas-powered vehicles. The used EV market is also growing, which makes them easier to find.

What is TCO? The TCO considers all direct and indirect costs of a product or service over its useful life. Understanding the TCO can help you get the most from your investment, including the purchase of a new vehicle.

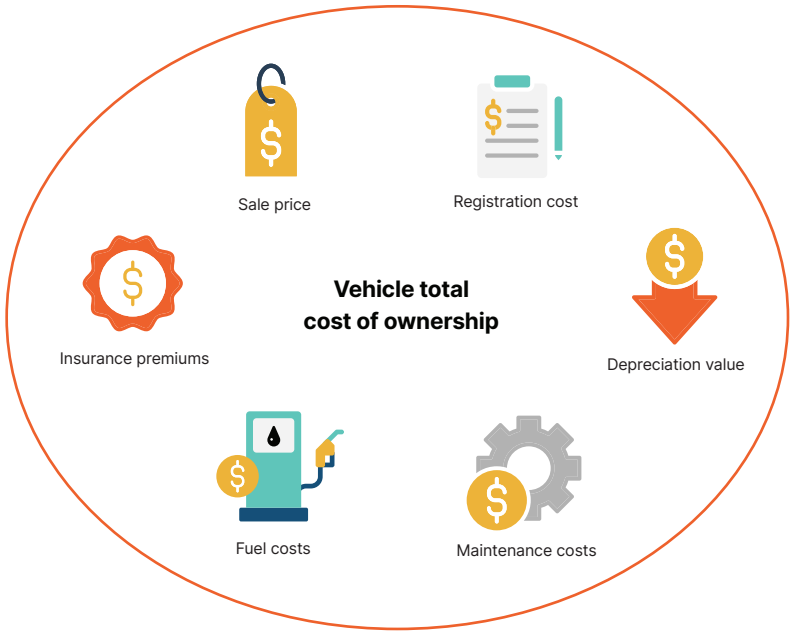


Figure 2: Factors of TCO. Image by Clean Foundation.

When buying a vehicle, consumers often focus on the sale price and immediate fuel costs, overlooking important factors like ongoing maintenance expenses and long-term fuel costs that can add up significantly with a gas-powered vehicle. These hidden costs are motivating more people to make the switch to EVs.

How much does it cost to drive 15,000 km* per year in Nova Scotia?

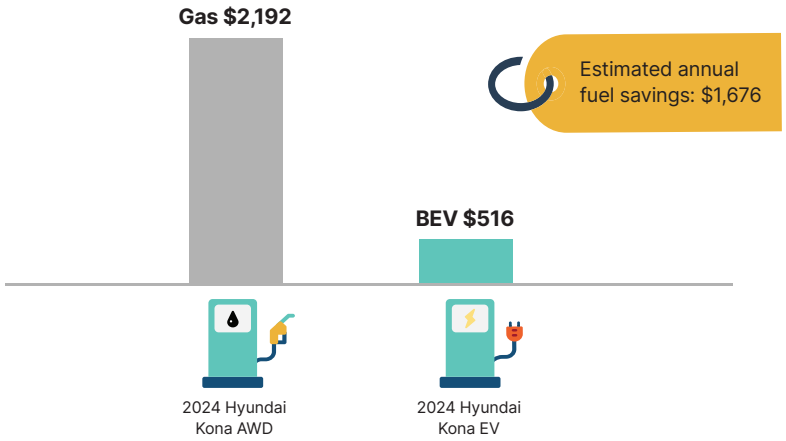


Figure 3: Fuel and Energy Costs: Gas-powered vehicle vs. EV. Image adapted and sourced from takeCHARGE! Fuel Savings Calculator.
**Canadian average of km driven per year.*

Tired of oil changes and unexpected visits to the mechanic? EVs come with far fewer maintenance demands than traditional gas-powered vehicles—routine check-ups and tire rotations are all you really need. According to the Canadian Automobile Association (CAA), EV owners spend approximately half as much on maintenance and repairs compared to those who own conventional gas-powered vehicles. Learn more about EV maintenance on page 29.

Insurance premimuns can vary in costs due to many factors. The best advice is to shop around, as some companies may charge more to insure an EV, while others might reward you with lower premiums for driving an environmentally friendly vehicle.

Environment benefits

There's a common belief that producing EVs have environmental drawbacks that can offset their benefits. While it's true that EVs use more materials and energy in production, they make up for this over their lifetime. In fact, within just two years of driving, a gas-powered vehicle's carbon dioxide (CO_2) emissions will exceed the total emissions from manufacturing an EV. This is because gas-powered vehicles continuously create emissions throughout their lifetime, whereas EVs hardly do in day-to-day use.

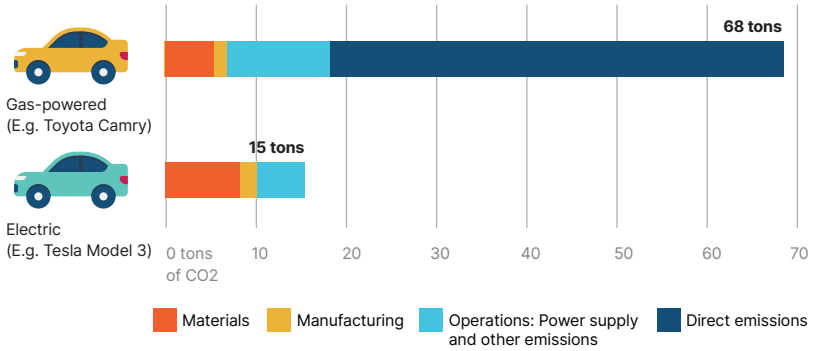


Figure 4: Lifetime Emissions Comparison: Gas vs. Electric Vehicles (8–12 Years). Data from International Energy Agency (2021). "The Role of Critical Minerals in Clean Energy Transitions". Adapted from an image on QZ | quartz.com

With a clean electricity grid, the graph above shows that an EV will emit approximately 53 tons less CO_2 compared to a conventional vehicle over 8-12 years. Even when an EV is charged using fossil fuel-based electricity grids like those in Nova Scotia, EVs produce nearly 50% less emissions than the average gas-powered vehicle.

But what about the battery? Even after years of use in an EV, many batteries will have enough capacity to be put to good use in second-life applications. Old batteries can be reused to power vehicles with lower range needs, like golf carts, or even be used for renewable energy storage.

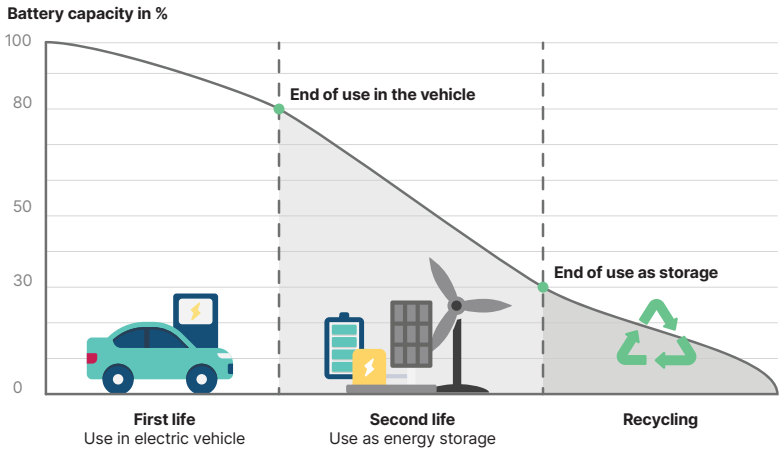


Figure 5: The potential uses of second-life batteries from EVs based on battery capacity. Graph made using data from Canadian Standards Association (2022). "Research on Circularity and Recycling of Lithium-Ion Batteries for Electric Vehicles". Adapted from an image on elektroautomatik.com.

Part 02

Charging your vehicle

"Home charging is critical to the EV experience—it's simple, convenient and inexpensive."

Before you **plug in**

Charging an EV is as simple as pressing the release button on your vehicle's charging port, grabbing the cable from your home charger or public station and plugging the connector into the charging port. Here's a few things you should know before you start charging:

Charging levels: Easy as **one, two, three**

EV chargers can be broken down into three types: Level 1, Level 2 and Level 3 or a Direct Current Fast Charger (DCFC).

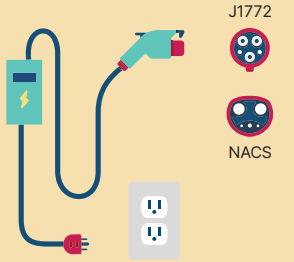
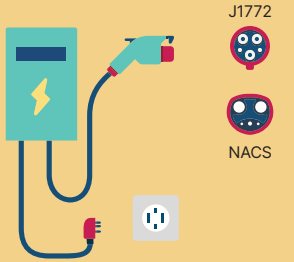
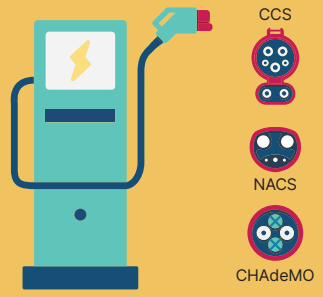
		**Level 1 chargers** 110 volts / 15 amps One hour of charge = up to 8 km of range
		**Level 2 chargers** 240 volts / 30 amps One hour of charge = up to 35 km of range
		**Level 3 or DCFC** 400-900 volts / 100 amps One hour of charge = over 250 km of range

Table 1: Charging level breakdown. Table created by Clean Foundation.

A **Level 1** charger plugs into a standard 120-volt wall outlet and is the slowest method of charging available. Most EVs come with this option.

Level 2 chargers, commonly available in public spaces or installed at home, can charge your EV three to seven times faster than a Level 1 charger.

Level 3 charging stations or DCFCs provide the quickest charge. These stations, found in public locations like retail shops and off highway exits, can charge your vehicle in 15 to 60 minutes. As of 2024, most PHEVs cannot accept this level of charge due to their smaller battery sizes.

Common EV Connectors

	**J1772** The most common connector for chargers today. The J1772 plug is used for Level 1 and Level 2 chargers only.
	**Combined Charging System (CCS)** Except for Tesla, most BEVs on the road today use the Combined Charging System (CCS) for DC fast charging (Level 3).
	**North American Charging Standard (NACS)** Formerly Tesla's proprietary connector, the North American Charging Standard (NACS) connector combines both Alternating Current (AC) and Direct Current (DC) into one inlet. Major automakers have announced that they will equip their North American models with this charge port as a factory standard beginning in 2025. Many charging station operators have also announced their support for the NACS connector.
	**CHAdeMo** Most automotive manufacturers have phased out this type of connector. If you own a Nissan Leaf or a Mitsubishi Outlander, check your vehicle's compatibility specifications.

Table 2: Charging connector breakdown. Table created by Clean Foundation.

At-home **charging**

DID YOU KNOW?
80% of charging occurs at home.

Most EVs on the road today are charged at home, saving owners time and money. Before determining which charger fits your needs, it's important to consider your energy consumption, living situation and vehicle.

Why use a **Level 1 charger** at home?

- Affordability.
- Ideal for individuals with short commutes or infrequent driving needs.
- Simple as plugging in any other electronic device to a 120-volt outlet.

The Level 1 charger comes standard with the purchase of most EVs and many drivers choose to solely use this method.

Why install a **Level 2 charger** at home?

- Convenience.
- Optimizes your battery's health.
- Cost-effective.
- Certain models may offer advanced features like Wi-Fi connectivity to monitor charging status, set schedules, track energy usage and adjust power levels.

Most EV drivers will recommend having a Level 2 charger professionally installed at your home. A Level 2 charger can plug into the same 240-volt outlet as your dryer or be hardwired directly into your electrical panel.

Installing a **Level 2 charger**

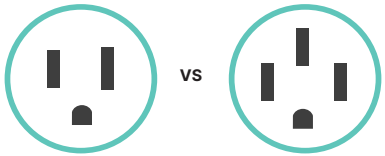
Can your home handle the electrical load?
To ensure safe EV charging, it's highly recommended that you consult a licensed electrician who can assess your home's electrical panel and energy service.

TIP
Before upgrading your electrical panel, ask an electrician about an electric vehicle energy management system (EVEMS). It balances the electrical use in your home with other major electrical appliances to make sure the EV charges efficiently without overloading the electrical system. For example, if you're using a lot of electricity for cooking or heating, the EVEMS might reduce how fast your vehicle charges until there's more power available (e.g. overnight).

Hardwired or **plug-in?**

Hardwired
Most electricians will recommend hardwiring your Level 2 charger to your home. Certain wall chargers have safety features like ground faulting and voltage checks so that power only flows when it's safe. These units are also able to regulate the flow of electricity so your vehicle charges quicker and more consistently. They're also less susceptible to theft as they cannot be easily unplugged.

Plug-in
A plug-in cable works like a big phone charger. It plugs into a 240-volt outlet and electricity flows directly through the cable to charge the vehicle. A key benefit to a charging cable is its portability. If you frequently travel to a second property or have a career that requires you to relocate, a charging cable might be more suitable for you than a fixed wall unit.



Check your home or garage for these two types of 240-volt receptacles:
- NEMA 14-50 (commonly used for electric stoves and larger appliances)
- NEMA 6-50 (a common outlet for welder plugs)

If you don't already have one of these 240-volt outlets, you'll need to have it installed. It's strongly recommended that you assess your home's capacity and hire a licensed electrician to ensure it's safely installed with a commercial grade plug to avoid overheating.

How much does it **cost to install?**

Charging installation costs can vary. At the time of this publication, charging equipment can range anywhere from $400 to $1,000 or more. By contrast, the installation depends on variables such as the complexity of the job, charger power and distance between the electrical panel and the charging station. Gather a few quotes to get the best price possible.

What if I live in a **multi-unit residential building (MURB)?**

Living in an apartment or condo with no direct access to a power outlet or dedicated chargers may seem like a barrier to owning an EV. However, you still have charging options.

If you don't drive often or need to charge daily, a Level 1 charger with a 120-volt socket in your parking garage should be sufficient for overnight charging. For longer trips or faster charging, you can access a nearby Level 2 or Level 3 public charger.

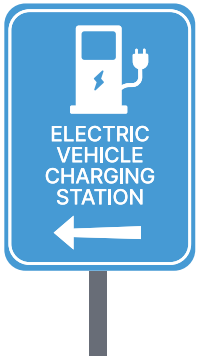
If you'd like a Level 2 station installed in your building, you'll require a wiring method approval from the condo board/landlord/association for the building you reside in. Once this is approved, you must consult a licensed electrician for further steps. See page 39 on resources to support multi-unit residential building residents, property managers and condo boards.

DID YOU KNOW? As the EV market grows, installing charging stations in multi-unit residential buildings can attract tenants, increase the long-term value of the property and improve energy management, making it a valuable feature for the future.

Public **charging**

Locating a station

There are many ways to locate public charging stations; using one of the free apps available for your smartphone is among the most effective. **PlugShare** is a free-to-use mapping resource that is trusted by the EV community. The app helps you locate nearby chargers and gives the option to check-in to the station to leave real-time updates on the station's energy output and reliability. It displays other station information, such as the connector type, payment requirements, hours of availability and nearby services. It also doubles as an excellent tool for trip planning!



If you prefer, you can use your vehicle's infotainment and navigation system to find stations along your desired route. Check your vehicle's instruction manual for more details.

How much does it **cost to charge publicly?**

Public charging costs can differ depending on a few factors such as the type of charger, the location and how the station charges you. Faster chargers (like Level 3 DCFCs) usually cost more, and prices might be based on time, the amount of energy used (kilowatt-hours) or the time of day. **PlugShare** will list the pricing criteria for each charger type so you know what to expect before you arrive.

Payment **methods**

Through the app

Charging apps can help you locate chargers and are the easiest way to pay for charging. **Flo** and **ChargePoint** are the most common station brands in Atlantic Canada. Simply add your payment method and vehicle details, and the app will use location services to identify the charger you're using, making payment quick and easy on arrival.

Pre-load a network-specific card

Flo and **ChargePoint** allow customers to request a free, loadable card to conveniently use at their stations. Visit flo.com or chargepoint.com for more information.

Debit or credit card

Some public stations let drivers pay by tapping their debit or credit card.

Plug and charge

Certain EVs and charging stations allow for plug and charge technology. This emerging technology facilitates seamless payment between the charging station and the vehicle, without the driver needing to swipe a payment card. Check your vehicle's manual to see if it supports plug and charge technology.

Public charging **etiquette**

Charging etiquette plays a key role in ensuring a positive experience for everyone in the EV community. Keep these tips in mind on your next charge.

Only park in an EV charging stall if you're charging
EV charging stalls are not designated parking spaces. Be sure to only use the stall if you're charging your vehicle.

Check in
Check in on the PlugShare app to let future users know if the charger is working and its availability. If there's a problem, it's always best to contact the charging station provider.

Charge and go
Unplug your vehicle once you've completed charging to free up the space. At a Level 3 DCFC, charging from 80% to 100% takes longer and you may incur idling fees if you remain connected after your charge is finished.

Do not unplug another EV
Only unplug another vehicle if the owner has explicitly given you permission, either through a physical note or by indicating it on the PlugShare app.

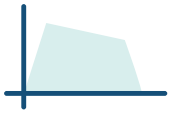
Leave a note
If you'll be away from the charger longer than expected, leave a note on your dash or on PlugShare to inform other EV drivers if they may need to unplug your vehicle once it's fully charged.

Safety and cleanliness
After charging, please store the cables neatly on the holder to prevent tripping hazards and protect the cables. Also, be sure to keep the station clean and free of litter.

Slow charging explained: What affects your **EV's charge time?**

Wondering why you're not getting as quick of a charge as usual or as advertised? The following factors may be impacting your charging.

Battery capacity
The larger the battery, the more time is needed to charge.



EV charging curve
As batteries charge, their speed gradually slows down to protect their health. The optimal charging rate typically occurs between a 20% and 80% charge.

Battery health
Over your battery's lifetime, wear will reduce its usable capacity and may lower peak charging capability.

Weather conditions
Optimal temperature is 20 degrees Celsius. Extremely low and high temperatures will noticeably impact your vehicle's charging speed. Colder climates require additional time and planning for EV users.

Vehicle's charge rate
Your vehicle has a maximum charging speed. The limitations are based on the vehicle's design and specifications. Refer to your manual to determine the charge rate expressed in kW.

Loads in use (How many things in the vehicle are drawing power)
Air conditioning, heating systems and the use of other electrical components may affect your vehicle's optimal charging speed.

Part 03

Maximizing your EV experience

"I'm no longer an anxious driver. Even with a reduced range, I'm confident knowing that I can easily reach my destination with careful planning."

Understanding **seasonal range variations**

Temperature affects all batteries, including the one in your EV. During extreme heat or cold, the battery can be negatively impacted, affecting its performance and efficiency. Lithium-ion batteries are happiest between 15-25 degrees Celsius. While your EV can still handle extreme weather, don't be surprised if charging speeds slow down or its range decreases during hot or freezing temperatures.

Seasonal impacts on electric range
(100% = range advertised by automaker)

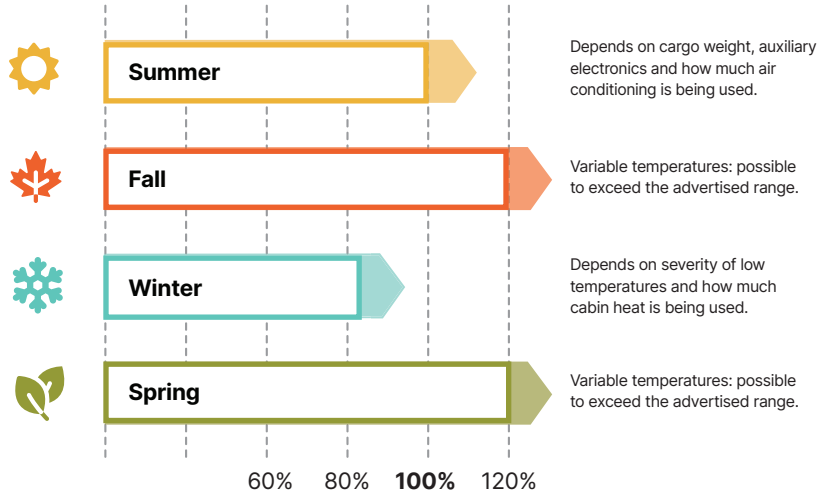


Figure 6: Image adapted and data sourced from roulonselectrique.ca.

Maximizing your **EV's range in the cold**

All vehicles—gas or electric—use more energy in cold temperatures. While gas-powered vehicles must refuel more often, EVs can lose nearly 30% of their range in extreme circumstances. But don't panic! There are a few clever tricks to help you navigate the cold and keep your range in check.

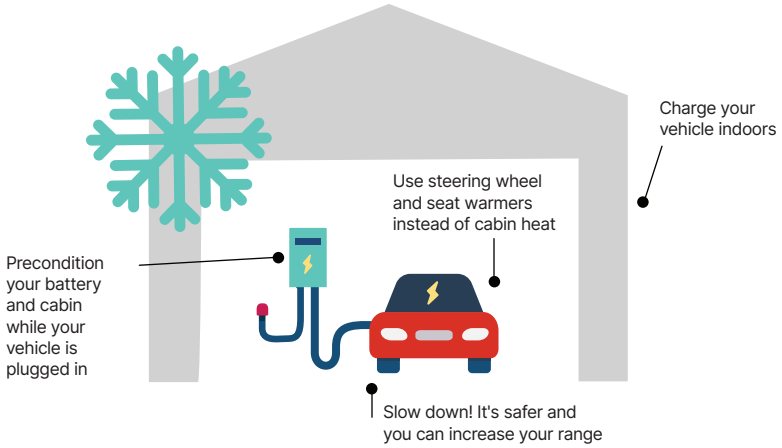


Figure 8: Image created by Clean Foundation.

Precondition your EV: **If you're cold, it's cold!**

Preconditioning is your vehicle's way of preparing for cold temperatures. There are two types:

1. Battery preconditioning heats your battery to the ideal temperature to ensure safe and faster charging. It's a proven way to maintain the optimal performance and lifetime of your EV's battery. When an EV accepts a charge outside of its ideal temperature range, it can accelerate battery wear and lose capacity over time.

2. Cabin preconditioning involves heating or cooling an EV's interior. Unlike internal combustion engines, EVs do not have enough waste heat to cycle into the cabin. Getting the vehicle interior to a comfortable temperature will therefore draw a significant amount of energy. Preconditioning your cabin during a charge guarantees that your battery's energy remains untouched since the energy is sourced directly from the power grid.

Most EVs have a preconditioning function that you can schedule to automatically warm or cool the battery and cabin from the power grid. Please refer to your instruction manual for detailed instructions on preconditioning.

DID YOU KNOW? Certain EVs are equipped with heat pumps that capture and retain battery heat. If your EV has one, you could save up to 10% of your range in cold weather.

Maximizing your **EV's range in the heat**

Extreme temperatures of 35 degrees Celsius and above can reduce your EV's range as the battery works overtime to stay cool. With a few simple adjustments, you can keep your EV cruising comfortably even in high temperatures.

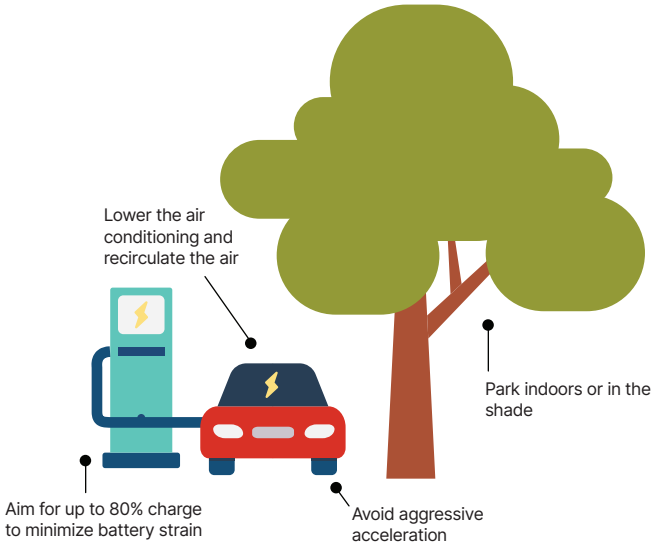
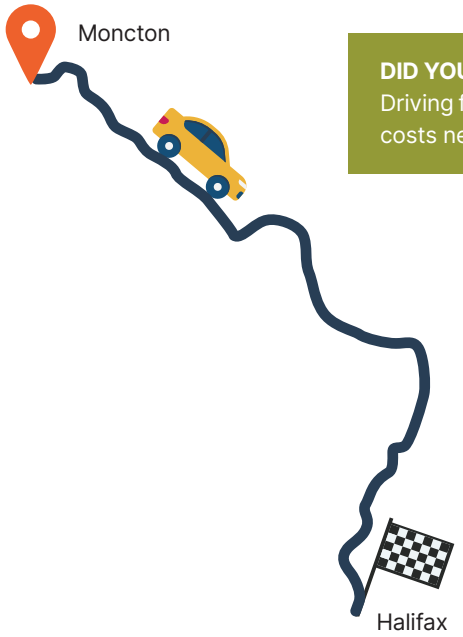


Figure 9: Image created by Clean Foundation.

Planning a **road trip**

Road-tripping in an EV is getting easier by the day. With newer models boasting average ranges of more than 450 km and a rapidly growing network of public chargers, running out of power is becoming a concern of the past. Like any great adventure, a successful EV road trip will rely on smart planning and foresight—and in the end, your extra effort will be worth the savings.



DID YOU KNOW?
Driving from Moncton to Halifax costs nearly 3x less in an EV.

Mapping the **ideal route**

The key to a smooth journey in your EV is to start by planning your route. For a successful EV road trip, you should:

- Utilize fast chargers.
- Have a back-up plan with alternative charging stations.
- Be prepared for longer wait times at charging stations during peak tourism periods.

Thankfully, several apps can make your journey even easier with **A Better Route Planner** being a favourite in the EV community. When using this app, you should:

1. Input your destination, your vehicle's make and model, current state of charge and the charge level you'd like to have upon arrival.

2. Customize the number of stops based on your preference for fewer but longer stops, multiple stops or the fastest arrival time.

Once your route is set, you'll have all your charging needs planned out, including where and how long you'll need to stop. You'll also be informed about nearby amenities to pass the time—whether it's grabbing a bite to eat, using the restroom or visiting a tourist attraction.

If you prefer, your EV may have trip planning features embedded in its navigation system. Check your vehicle's instruction manual to learn more.

Travelling across borders
If you're travelling to another province or country, do some research and get comfortable with different charging apps. By downloading them and entering your details ahead of time, you won't have to rely on weak Wi-Fi connections on the road.

Tips for **long journeys**

As always, practicing good driving habits can significantly impact your experience, especially on long journeys.

Understanding your EV's advertised range
Aim to arrive at public chargers with around 20% of your range remaining. This extra buffer helps account for unexpected external factors.

Reduce your speed
Cruising within the speed limit isn't just for safety—it's a win for your battery, too. Slow and steady wins the race!

Accelerate smoothly
Easing into acceleration optimizes battery performance and prolongs your tire life.

Make use of regenerative braking
Depending on your vehicle's specifications, you can slow down simply by easing off the pedal, allowing the vehicle to capture energy and recharge the battery. Once you experience it, you'll likely wonder how you ever drove without this feature.

Use cruise control
Meet your new best friend: cruise control! It's perfect for maintaining a steady speed and preserving battery life.

Pack light
The less you pack, the less energy you burn. Always bring your Level 1 charger, too—you never know when it'll save the day.

Check your tire pressure
Keep your tires pumped up to the recommended levels. It's a simple way to avoid friction, wear and range reduction.

Monitor your cabin temperature
Climate control = battery control. Recirculate air and use seat warmers, or eco-climate settings. Stay comfy, but keep it efficient!

Aerodynamics
Need to take extra gear? Go for rear-mounted carriers to minimize wind drag. Your EV (and your range) will thank you.

Towing
Yes, it's true—towing a heavy load can cut your range by almost half; so check your vehicle's towing capacity, plan accordingly and charge up often!

Part 04

Maintaining your EV

"The benefit of a fully electric vehicle is that you don't have to pay for oil changes, spark plugs or transmission fluid—you don't have to pay for maintenance on the engine at all."

Servicing your **EV**

Recommended servicing
*Check with your automaker to determine your servicing schedule.

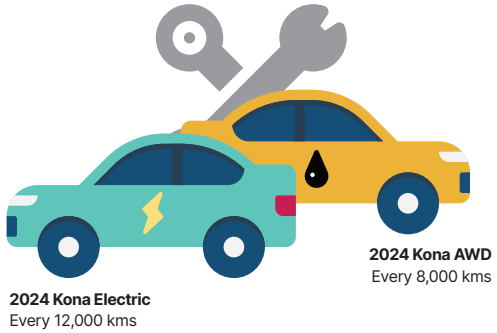


Figure 10: Data from Hyundai Canada. Image created by Clean Foundation.

Maintaining an EV is remarkably straightforward. While your EV will still require regular care, it benefits from fewer service needs thanks to its reduced number of mechanical moving parts.

On the other hand, if you're driving a PHEV, you'll need to stick to a maintenance routine closer to that of a gas-powered vehicle, as it still has an internal combustion engine that will need oil changes and other regular servicing. Check your vehicle's manual for more information on servicing needs.

Do I need to visit a specific mechanic?
For EV service, it's best to go to an EV-certified dealership, as they have the tools and expertise needed to safely work on high-voltage components. For non-electric parts, like tires or brakes, most local mechanics can help, though it's a good idea to check that they're comfortable working on EVs.

Tire **care**

The added weight of an EV increases braking distance, and the instant acceleration from the motor can cause faster tire wear if you're not equipped with the right tires.

Choosing the right tires
When shopping for new tires, always check the tire load index and opt for tires designed to handle heavier loads. Tires with lower rolling resistance will boost your EV's range by reducing friction, while those with enhanced grip additives and quality rubber compounds can improve braking performance and resist wear. Additionally, low-noise tires help maintain the quiet, smooth ride EVs are known for.

Best practices for tire maintenance
Regular maintenance is key to maximizing tire life. Monitor tire pressure consistently and have your wheels aligned every six months. Consult with your tire shop or mechanic for advice on when to rotate your tires for optimal performance.

Undercoating

Before applying any undercoating product, it's recommended to consult with your dealership to ensure that your warranty remains intact. Like any other vehicle, undercoating an EV can shield vulnerable components and extend its lifespan.

Battery **care**

An EV's battery is built to last for the average vehicle's lifetime of eight to 12 years, but proper maintenance is essential for it to operate effectively.

80% "rule"
The 80% rule refers to keeping your BEV's battery charged between 20% and 80% of its capacity. While this isn't a hard and fast rule, by only charging up to 80%, you're helping to ensure your battery performs at its peak and does not reduce its overall storage capacity. This rule applies to both home and public charging. Charging speeds also slow down once the battery is 80% full.

Battery technology is built to manage charging outside of these limits and sometimes you'll need the extra range to reach your destination. Always prioritize your needs; if you're on a long journey, it's better to maximize your BEV's range and charge up to 100% rather than run the risk of being stranded.

Conversely, you'll want to avoid leaving your BEV with a completely empty battery, as it needs power even if it's not being driven.

*Note that only certain battery types are limited to 80%. The best advice is to consult your vehicle's instruction manual on specific charging requirements for your vehicle's battery.

Going away for a vacation?
A parked BEV can lose about 1% of its battery power daily. If you plan to leave your vehicle unused for a while, it's a good idea to charge it sufficiently to cover the days you'll be away.

Roadside **assistance**

While every driver hopes their vehicle will run seamlessly, problems like flat tires and a dead battery can leave you stranded. When calling roadside assistance, let them know you're driving an EV as they may need to take specific precautions:

- EVs may require flatbed towing to avoid damage to the motors since they lack a true neutral gear position.
- If your battery runs out, many companies will need to tow you to the nearest charging station.

Part 05

Supporting resources

"I've learned so much from online forums and can always find support for any questions or tips about driving my EV."

Just like this guidebook, there are many other helpful resources out there to help you on your EV journey!

Apps

The following is a list of some of the best apps in the market for EV drivers.

Public **charging**

1. PlugShare
An essential for EV owners. Use PlugShare to locate nearby chargers, to check in and to plan your trips.

2. Flo
One of the most common charger operators in Canada. Use the app as a charging locator and payment method.

3. ChargePoint
Another common charging station operator. Use the app to as a charging locator and payment method.

The following are apps for other chargers you may encounter in the Atlantic region and having them downloaded ahead of time may be useful.

4. SWTCH

5. eCharge (New Brunswick)

6. ChargeHub

Trip **planning**

1. A Better Route Planner (ABRP)
Trusted amongst the EV community, ABRP offers users with an intuitive way to plan trips and ensure you arrive at your destination comfortably.

2. Google Maps
Constantly improving its mapping features, Google Maps can help you plan trips by locating available chargers.

3. Apple Maps
EV routing on Apple Maps adds EV charging stations to a route when it detects the vehicle may run low on battery.

Educational resources by **province**

Atlantic Canada

Drive Electric Roulez Électrique

Your EV hub for New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador.

driveelectricatlantic.ca

CAA

CAA Atlantic offers a wealth of resources on electric vehicles, including buying guides, cost calculators and other essential information.

atlantic.caa.ca/automotive/electric-vehicles

Nova Scotia

Next Ride

Test drive an electric vehicle! The Next Ride team tours the province to help Nova Scotians experience the excitement of electric vehicles and e-bikes.

nextridens.com

EVAssist NOVA SCOTIA

Nova Scotia's all-in-one resource for EVs.

evassist.ca

Nova Scotia POWER An Emera Company

Whether you're charging at home or on the go, Nova Scotia Power's website offers resources that guide you on EV home charging, connects you to a network of certified contractors and provides information about Nova Scotia Power's EV Fast-Charging Network.

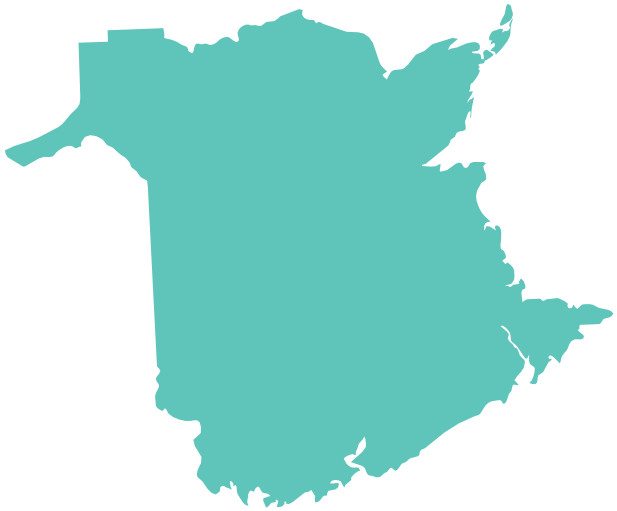
nspower.ca/ev

efficiency NOVA SCOTIA

Efficiency Nova Scotia offers valuable information and rebates, including the Eco Shift program for residential EV owners and the EV Charging program for condo and apartment building owners.

efficiencyns.ca

New Brunswick



NB LUNG POUMON NB

Since 2014, NB Lung has championed EV education and advocacy in New Brunswick. Its resources highlight the benefits of EVs, focusing on cleaner air and better respiratory health for all.

nblung.ca

Énergie NB Power

the power of possibility

Your all-in-one resource for everything EVs in New Brunswick. Their website includes information about available rebates and home and business charging options.

nbpower.com/en/products-services/electric-vehicles

Prince Edward Island

Prince Edward Island CANADA

Learn more about EVs and the provincial incentives available to residents of PEI.

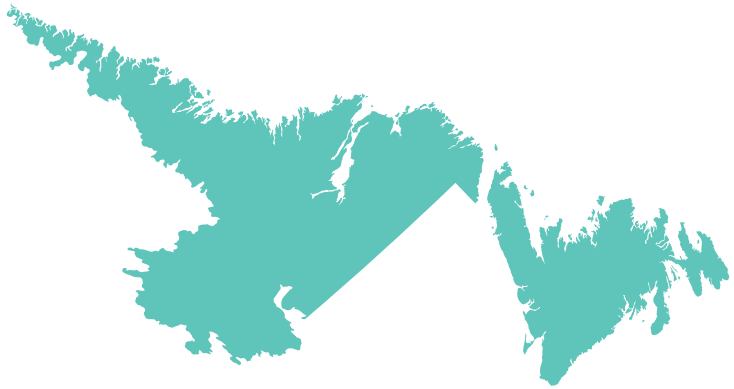
princeedwardisland.ca/en/information/environment-energy-and-climate-action/electric-vehicles

SAFE DRIVERS PEI

Staff with the province's Net Zero Office and Safe Drivers PEI host events throughout the province to promote awareness of EVs. In 2024, the team provided EV test drives throughout the province. Keep an eye on their website for upcoming opportunities.

safedriverspei.com/ev-experience

Newfoundland and Labrador



Learn more about how Newfoundland Labrador Hydro is driving EV adoption forward by expanding the fast-charger network and incentivizing eligible vehicle purchases.

nlhydro.com/electric-vehicles

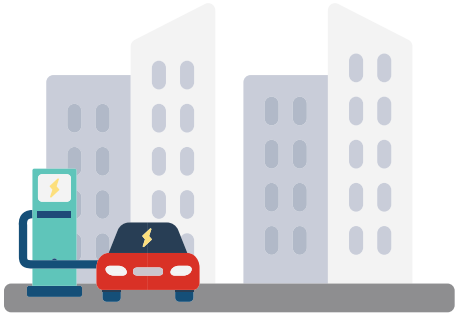
takeCHARGE helps residents save energy and money. Visit their website to explore energy saving tips and tools, including their fuel savings calculator to see how much you're saving by driving electric.

takechargenl.ca/evs

Drive Electric NL is your go-to source for all things EV. View and purchase an EV charger, hear first-hand experiences from EV owners and connect with the community.

driveelectricnl.ca

MURBs and charging: **condominium owners, boards and property managers**



Murbly.com is a reliable resource for simplifying the installation of EV charging stations in multi-unit residential buildings. It provides valuable insights and tools to ensure your building is ready for the electric future. Whether you're a unit owner, condo board member or property manager, Murbly equips you with the knowledge to navigate the installation of EV charging solutions.

Community

Want to dive into the conversation in Atlantic Canada?

The Electric Vehicle Association of Atlantic Canada (EVAAC) Facebook group is perfect for connecting with fellow EV enthusiasts, getting answers to your questions and staying in the loop with the latest EV news.

Glossary of **electric vehicle terms**

Navigating the world of EVs can feel overwhelming with all the new terms and changing trends. But don't worry—this glossary will help you decode everything from charging levels to battery types, making it easier to stay fully informed about EV technology.

Alternating current (AC): A term used to describe the back-and-forth flow of electricity. EVs use AC to charge from home or public outlets, but the vehicle's battery stores energy as direct current (DC). See **Direct current**.

"Always-Be-Charging" (ABC): Unlike gas driven vehicles, EVs can refill in many places. ABC is a great rule of thumb that many automakers recommend to keep batteries full more often and decrease visits to fast chargers.

Amps: A measurement of electrical current flow. The charging station's amp rating is one factor that determines the maximum amount of power that can be delivered to your vehicle's battery. You can think of amps as the amount of liquid that can pass through a gas nozzle or water hose.

Battery electric vehicle (BEV): A vehicle that runs exclusively on electricity.

Battery: Where an EV's power is stored. It's the equivalent of a gas tank.

Battery cell: The smallest unit in an EV's overall battery pack. Hundreds or even thousands of cells are required to store enough electricity for an EV.

Battery module: A group of battery cells bundled together in an EV's battery pack.

Battery pack: The total structure of the EV battery.

Bi-directional charging: An emerging technology that allows compatible EVs to power the world around them. Power stored in the battery pack of an EV can be discharged to appliances, buildings or the electrical grid. See **V2G, V2H** and **V2L**. **Not all EVs are capable of bi-directional charging, check your owner's manual for more information.**

Carbon emissions: The release of carbon dioxide (CO2) and other gases into the air, mostly from burning fossil fuels like coal, oil and gas.

CHAdeMO: A type of charging connector primarily found on older Nissan Leaf models and certain Mitsubishi models.

Charging: "Fueling" your EV with electricity.

Charging station: A device that supplies electricity to recharge the batteries of BEVs and PHEVs.

Combined charging system (CCS): A type of fast-charging connector used in most EVs, excluding Tesla.

Connector: The type of plug on the power cord that connects the charging station to the outlet on an EV.

Direct current (DC): A current that provides constant voltage and flows in one direction. In EVs, DC power is used at fast-charging stations to charge the battery quickly.

Drag: A vehicle's wind resistance. The more drag, the harder your vehicle must work to displace air and the more the range will be impacted.

Electric vehicle (EV): A vehicle capable of being propelled by an electric motor. EV is an all-encompassing term for the subtypes of vehicles with an electric motor. This guide does not cover conventional hybrids as EVs.

Electric vehicle supply equipment (EVSE): Everything you need to safely charge your EV. An EVSE includes cables, connectors and charge points. Otherwise known as a "charging station."

Fast charging: Also known as Level 3 charging, it refers to the quickest method to charge your vehicle. These chargers are commonly found at shopping centres, along major highways, dealerships and other public locations. Fast chargers are not available for home installation.

Fossil fuels: These consist of coal, oil and natural gas, and come from the remains of ancient plants and animals buried deep in the earth. When burned for energy, they release carbon emissions that harm the environment and contribute to climate change.

Frunk: A trunk space in the front of the vehicle where an internal combustion engine would typically live.

Fuel cell electric vehicle (FCEV): A vehicle that relies on hydrogen fuel cells to charge its battery.

Home charging: The act of charging your vehicle from your primary residence. About 80% of EV charging happens here.

Hybrid electric vehicle (HEV): A vehicle that uses both an electric motor and internal combustion engine to achieve better efficiency. These vehicles always rely on gasoline and do not have a plug to charge.

Incentives and rebates: Some provinces may offer rebates towards the purchase of eligible EVs. Check in with government rebate programs to see what may be available at your time of purchase.

Internal combustion engine (ICE): A mechanical system that ignites fuel to release energy (combustion) within itself to give motive power or propulsion to an object, such as a vehicle.

J1772: A common North American standard for Level 1 and 2 charging connectors.

Kilowatt (kW): A measure of power in 1,000 watts.

Kilowatt-hour (kWh): A measure of energy to indicate the number of watts consumed in an hour.

Level 1: The slowest method of charging your EV. A Level 1 charger plugs into any standard 120-volt wall outlet, and is the same type used to power most small electronics.

Level 2: Mostly installed at home, workplaces and public buildings. A Level 2 can charge a BEV to 80% in four to ten hours and a PHEV in one to four hours.

Level 3: See **Fast charging.**

Lithium-ion: The most popular type of rechargeable battery and the battery technology used in most EVs (and everyday electronics).

Motor: The electric motor in an EV changes electrical power into motion. Electricity flows through coils of copper wire, creating a magnetic field that spins a part called the rotor. The rotor turns the axle, which moves the vehicle's wheels.

North American charging standard (NACS): Known as the Tesla charging connector, it's used in Tesla's Supercharger Network. As of 2024, most major automotive manufacturers announced that drivers would be able to charge their vehicles with an adapter at Tesla charging stations. Soon, most EVs will be standardized to use this connector.

Off-peak charging: Charging your EV at times when demand for electricity is lower (typically overnight), which helps maintain a healthy grid and keeps rates low for everyone.

On-board charger: The device in your EV that converts energy from AC to DC. Fast chargers can bypass the on-board charger since it's already DC.

One-pedal driving: An advanced level of regenerative braking that lets drivers control both acceleration and deceleration with just the accelerator pedal. This feature isn't available in all EVs.

Plug-in hybrid electric vehicle (PHEV): A type of EV that uses an electric motor and internal combustion engine. It includes a plug for charging its internal batteries and emits zero emissions from the exhaust while using the electric motor.

Range: The total distance that your vehicle can travel on a full battery, expressed in kilometres or percentage of battery left in an EV.

Regenerative braking: Also known as "regen", it's a special feature that captures the energy when slowing down or braking and converts it into power to recharge the battery. Regenerative braking helps improve energy efficiency, minimizes wear and tear on brakes and can be convenient.

Renewable energy: Renewable energy comes from natural sources like the sun, wind and water that can be used repeatedly without running out and has generally lower emissions than fossil fuels.

Solid-state battery: An emerging type of battery technology. This technology promises faster charging times, longer ranges and reduces the risk of overheating.

State of charge (SoC): Refers to the percentage of battery left in an EV. It's like a fuel gauge in a gas-powered vehicle and helps drivers know how much charge is left in their EV's battery.

Supercharger: Tesla's proprietary fast charging network.

Vehicle-to-grid (V2G): An emerging technology that enables some EVs to both draw power from and send power back to an electrical grid to help balance its energy demand and supply. V2G is part of a larger initiative known as vehicle-grid integration.

Vehicle-to-home (V2H): An emerging technology that enables certain EVs to power some or all of a home by transferring stored energy from its battery back into a home's power system.

Vehicle-to-load (V2L): A technology that allows certain EVs to supply power to external devices and small appliances.

Zero-emission vehicle (ZEV): A broader term for a vehicle that emits no emissions while in operation.

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Do you have questions, comments or feedback about this guidebook?
We'd love to hear from you!

Please reach out to us at **transportation@cleanfoundation.ca.**

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