Glossary of Electric Vehicle (EV) Terms

The world of electric vehicles (EVs), their charging systems, and related technology can be overwhelming. With new terms, changing trends, and the variety of vehicles on the market, it's easy to get lost.

This glossary breaks down the most important terms in simple language with some examples.

For more information about electric vehicles, please visit **saskatoon.ca/EV**.

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A

Term	Definition
Advanced Driver Assistance Systems (ADAS):	Vehicle systems that assist the driver using sensors and software to improve safety and driving convenience.
Alternating Current (AC):	AC is the type of electrical current used by most home outlets and public charging stations (see Level 1 and Level 2) which then needs to be converted to DC (Direct Current) for storage in the EV's battery.
Amps (Amperage):	Amps measure the flow of electrical current. A higher amperage means more electricity can flow, allowing for faster charging. The higher the charging station's amp rating, the faster your EV battery will charge. A Level 2 charger with 40 amps can charge faster than one with only 16 amps.

B

Term	Definition
Battery Electric Vehicle (BEV):	An EV that runs entirely on electricity, with no internal combustion engine. It is charged using an external power source. Some popular BEVs include the Tesla Model 3, Nissan Leaf, Chevrolet Bolt, and Hyundai Kona Electric.
Battery End of Life:	The point when an EV's battery no longer holds enough charge to be considered useful for the vehicle's range, typically when it has lost a significant portion of its original capacity. EV batteries generally last between 8 to 15 years, depending on usage and environmental conditions. Most manufacturers provide an 8-year warranty on the battery.
Battery Pack:	The complete collection of battery cells in an EV that stores electricity. It is essentially the "fuel tank" for electric vehicles. There are light-duty EVs available ranging from a small battery pack of 42 kWh in Kia e-Niro to 215 kWh Chevrolet Silverado.
Battery Pre-conditioning:	The process of warming or cooling the battery to an optimal temperature before driving or charging. In extreme cold weather, preconditioning helps keep the battery at a temperature that enables faster charging and improved driving range. This is especially useful in cold climates where battery performance can decrease. The Tesla Model S uses battery preconditioning to optimize battery performance in winter, enabling faster charging and improved efficiency in cold weather.
Bi-Directional Charging:	A technology that allows an EV to send power back to the grid or supply power to external devices, such as a home or an appliance. The 2024 Chevrolet Silverado EV offers bi-directional charging capabilities, allowing it to power a home during a power outage.

C

Term	Definition
Carbon dioxide emissions (CO_2):	Carbon dioxide (CO_2) emissions are a greenhouse gas (GHG) emitted directly from the tailpipe of ICE and hybrid vehicles, but not BEVs. CO_2 is also emitted from the burning of fossil fuels used to generate electricity in Saskatchewan.
Charging Station or Charging Port:	A place where you can plug in your EV to recharge. Charging stations come in different types, from slow home chargers to faster public chargers. Public charging stations are often located in parking lots of shopping malls, or near highways for long-distance travel. A charging station may have numerous ports, with each able to charge one car at a time.
Combined Charging System (CCS):	A standard for fast-charging connectors. Most non-Tesla EVs, like the Chevy Bolt or Ford Mustang Mach-E, use the CCS connector for rapid charging at Level 3 stations. A CCS charger can charge an EV like the Volkswagen ID.4 to 80% in about 30 minutes.

C

Term	Definition
Connector:	The physical plug that connects your EV to the charging station. While Tesla vehicles use a proprietary connector, other vehicles typically use J1772 or CCS charging connectors. Tesla drivers can use the Tesla Supercharger Network or purchase an adapter to charge on public CCS or J1772 chargers.

D

Term	Definition
Direct Current (DC):	Unlike AC, DC flows in one direction. This is the form of energy used by EVs to store power in their batteries. Fast chargers (Level 3) supply DC power directly to the vehicle's battery, enabling faster charging. A Tesla Supercharger uses DC fast charging to recharge the Model 3 in about 30 minutes.
Drag:	The resistance a vehicle faces as it moves through the air. More drag means more energy is needed to keep the vehicle moving, which can reduce range. EVs with sleek designs, like the Tesla Model S, typically have lower drag and better efficiency than boxier models.

E

Term	Definition
Electric Vehicle (EV):	A vehicle that uses electricity stored in a battery to power an electric motor instead of relying on a traditional gasoline engine. EVs come in different forms, including BEVs (Battery Electric Vehicles) and PHEVs (Plug-in Hybrid Electric Vehicles). The Tesla Model Y is a BEV, while the Toyota Prius Prime and Mitsubishi Outlander are PHEVs.
Electric Vehicle Supply Equipment (EVSE):	The equipment required for charging an EV, which includes the charging station, cables, connectors, and the necessary safety features. A typical Level 2 charging station at home will include a wall-mounted box, a charging cable, and a J1772 connector for your EV.
EV Management System (EVMS):	A smart system that helps optimize the use of electricity for charging EVs. It can schedule charging during off-peak hours to avoid higher costs during peak hours. This system is especially useful in shared infrastructure, like multi-unit residential buildings, offices, and malls, where multiple users may share the same charging stations.
EV Ready:	Buildings or facilities that are pre-planned with some infrastructure built to support the installation of EV charging stations. Buildings designed to be EV ready incur lower charger installation costs than non-EV ready buildings because the process is well planned, requiring less disruptive digging and retrofitting.

F

Term	Definition
Fast Charging (Level 3):	A Level 3 Fast Charger uses DC power to provide around 50kW to 350kW of charge. These chargers are typically located at highway rest stops, shopping centers, or other public locations for a quick charge, especially during road trips. A Tesla Model 3 can be charged from 0 to 80% in about 30 minutes at a Supercharger (350kW) station.

F

Term	Definition
Fuel Cell Electric Vehicle (FCEV):	An EV that uses hydrogen fuel cells to generate electricity instead of relying on a battery. While not as common, FCEVs are an alternative to battery electric vehicles (BEVs). The Toyota Mirai is a hydrogen-powered vehicle that uses a fuel cell rather than a battery to generate power.
Fuel Consumption Rating:	Fuel consumption ratings are shown in litres per 100 kilometers (L/100 km). To compare fuel economy ratings expressed in miles per imperial gallon (mpg) or in miles per U.S. gallon (mpg U.S.), use Natural Resources Canada's (NRCAN) fuel consumption ratings search tool. Fuel consumption rating is calculated as the combined rating from city (stop-and-go style in an urban setup) and highway (open highway and rural road) driving. NRCAN has published a fuel consumption guide that can also help drivers to compare ICE vehicles to EVs. To help you compare EVs, a conversion factor is used to convert electrical energy consumption values, expressed in kilowatt hours per 100 kilometers (kWh/100 km), into gasoline litres equivalent per 100 kilometers (Le/100 km) in ICE vehicles. One litre of gasoline contains the energy equivalent to 8.9 kWh of electricity.
Full Self Driving (FSD):	A set of advanced driver-assistance technologies that allow a vehicle to drive autonomously in most conditions without human intervention. FSD systems can control steering, braking, acceleration, and navigation. However, most systems still require the driver to monitor the road and take over in certain situations. FSD differs from ADAS as it aims to manage driving as a whole, whereas ADAS only assists the driver with specific functions. A Tesla with FSD can drive on highways, change lanes, park itself, and navigate city streets, although the driver must be ready to intervene.

G

Term	Definition
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Grid emission factor:	The amount of carbon dioxide (CO_2) and other greenhouse gases (GHGs) emitted per unit of electricity produced, typically measured in grams of CO_2 per kilowatt-hour (gCO_2/kWh). A grid dominated by fossil fuels like coal or natural gas has a higher emission factor than to a grid that uses renewable energy sources like hydro, wind, or solar. As the energy mix shifts toward more renewable sources, the GHG emissions associated with EV charging will decrease, lowering the vehicle's overall environmental impact.

H

Term	Definition
Heat Pumps in EV:	Devices that use electricity to transfer heat from one place to another, providing more efficient cabin heating in EVs. In addition to using less energy, they help improve driving range by reducing energy drain from traditional heaters. Heat pumps also improve defrosting and de-icing, helping ADAS (Advanced Driver-Assistance Systems) perform better in colder weather. Heat pumps are also used for cooling during summer.
Home Charging:	Charging your EV at home, typically using a Level 1 charger and can be upgraded to Level 2. About 80% of EV charging occurs at home. A Level 2 charger installed at home can recharge a Tesla Model 3 or similar vehicle overnight.
Hybrid Electric Vehicle (HEV):	A vehicle that combines both an electric motor and a gasoline engine but cannot be plugged in to charge. HEVs use the gas engine for longer trips and the electric motor for short distances. The Toyota Prius is an HEV that uses both electricity and gasoline.

I

Term	Definition
Integrated Control System in EVs:	In most modern EVs, an integrated control system monitors and optimizes energy use, motor performance, and battery health. For instance, the system can adjust power distribution between wheels for better traction or fine-tune regenerative braking to maximize energy recovery. This level of precision not only enhances driving efficiency but also extends the lifespan of critical components.
Internal Combustion Engine (ICE) Vehicles:	Vehicles powered by an engine that burns fuel (gasoline or diesel) to generate power. These are the traditional vehicles that have been in use for many years.

J

Term	Definition
J1772:	The most common connector used for Level 1 and Level 2 charging in North America. Most non-Tesla EVs, like the Chevy Bolt and Nissan Leaf, use this standard connector. If you're charging a Ford Mustang Mach-E at a public Level 2 station, you'll use a J1772 connector.

K

Term	Definition
Kilowatt (kW):	A unit of power used to describe the rate at which electricity is consumed or delivered. Higher kW ratings mean faster charging times. A Level 1 charger typically delivers about 1.4 kW, while a Level 2 charger can deliver between 3.7 kW and 22 kW, depending on the model.
Kilowatt-hour (kWh):	A unit of energy that measures how much electricity an EV battery can store. A higher kWh means the EV can travel further on a full charge. The Tesla Model S has a battery capacity of up to 100 kWh, giving it a range of over 370 miles (600 km).

L

Term	Definition
Level 1 Charging:	The slowest form of charging, using a standard 120-volt outlet. It's often used for overnight charging but can take a long time (8–12 hours) to fully charge an EV. You can charge a Nissan Leaf using a standard wall outlet, but it will take a long time to reach a full charge.
Level 2 Charging:	A faster method of charging using a 240-volt outlet. It can charge most EVs in 4–10 hours. A Chevy Bolt can be fully charged in about 8 hours with a Level 2 charger installed at home.
Level 3 Charging (DC Fast Charging):	The fastest charging method, which provides DC power directly to the EV's battery. These chargers are commonly found at public locations and may be able to charge an EV to 80% in about 30 minutes. Tesla Superchargers are an example of a Level 3 charger, providing rapid charging for Tesla vehicles.
Lithium Ion Battery (LIB):	A type of rechargeable battery used in most EVs because it can store a large amount of energy in a compact, lightweight form. These batteries are preferred for their efficiency and long life.

M

Term	Definition
Miles Per Galon Equivalent (MPGe):	MPGe is a term used by the EPA (Environmental Protection Agency) in the U.S. to help consumers compare the energy efficiency of electric vehicles (EVs) to traditional gasoline-powered vehicles. It indicates how far an EV can travel using the amount of energy equivalent to one gallon of gasoline (33.7 kWh). The higher the MPGe, the more efficient the vehicle is at using electricity. For example, the Tesla Model 3 (Standard Range Plus) achieves about 141 MPGe in the city and 127 MPGe on the highway. The Chevrolet Bolt EV has a rating of 127 MPGe in the city and 108 MPGe on the highway. The Nissan Leaf gets approximately 123 MPGe in the city and 99 MPGe on the highway, while the Ford Mustang Mach-E (Standard Range) has an efficiency of 105 MPGe in the city and 93 MPGe on the highway.
Motor:	The electric component of an EV that converts electrical energy into mechanical power to drive the wheels. Unlike gas-powered vehicles, EV motors are much simpler and require less maintenance. The Tesla Model X uses dual electric motors for all-wheel drive.
Multi-Unit Residential Buildings (MURBs):	Apartment buildings or condominiums where installing EV chargers can be challenging due to shared spaces and infrastructure limitations. Some MURBs are now adding charging stations in their parking lots to accommodate growing EV demand.

N

Term	Definition
North American Charging Standard (NACS):	Tesla's proprietary charging connector. Tesla owners can use NACS chargers, but in 2024, other manufacturers have announced they will adopt this standard. The Tesla Model 3 uses NACS, while other brands like Ford are integrating adapters to use Tesla charging stations.

O

Term	Definition
Open Charge Point Protocol (OCPP):	A communication standard that ensures EV charging stations from different manufacturers can work together on the same network. It allows users to charge their EVs at various stations, even if they are part of different charging networks.

R

Term	Definition
Range:	The distance an EV can travel on a full charge. Range is affected by battery size, driving habits, terrain, and weather conditions. The Tesla Model Y has an estimated range of 330 miles (530 km) on a full charge.
Recharge Time:	For PHEVs and BEVs, recharge time refers to the estimated time (in hours) required to recharge the battery fully or up to 80%. The recharge time varies based on the charging station's voltage level and the vehicle's onboard charger capacity. As the charger's voltage increases, the recharge time decreases. DC chargers typically provide faster charging than AC chargers. However, even at the same voltage level, two different EVs may have different recharge times depending on the capacity of their onboard chargers.

R

Term	Definition
Regenerative Braking:	A system in which the vehicle recovers energy during braking and stores it in the battery. This helps extend the driving range. Many EVs, including the BMW i4, use regenerative braking to capture energy when slowing down.

S

Term	Definition
Solid-State Battery:	A next-generation battery technology that promises to offer faster charging, longer lifespan, and increased safety compared to traditional lithium-ion batteries. Solid-state batteries are still in development, but companies like Toyota are working on bringing them to market.
Supercharger:	Tesla's fast-charging network, offering rapid recharging for Tesla vehicles. Other EVs are beginning to integrate adapters to use this network. Tesla Model S owners rely on Supercharger stations for quick recharges during long trips.

T

Term	Definition
Tailpipe Emissions:	Air pollutants released directly from a vehicle's exhaust system as a result of fuel combustion, including carbon dioxide (CO_2), nitrogen oxides (NO_X), particulate matter (PM), and hydrocarbons. Battery electric vehicles have zero tailpipe emissions because they do not burn fuel or have an exhaust system.
Total Cost of Ownership:	The total cost to own and operate a vehicle over its entire lifetime, including the purchase price, fuel or electricity costs, maintenance, repairs, insurance, and depreciation. An EV may have a higher upfront cost, but a lower long-term TCO due to lower fuel and maintenance costs compared to a gasoline vehicle.

U

Term	Definition
Usable battery:	The part of an EV's battery that is available for use after accounting for the safety reserve. The "usable" part of the battery is what powers the car, while the non-usable portion is there to protect the battery from damage.

V

Term	Definition
Vehicle-to-Grid (V2G):	A system that allows EVs to both draw power from and send power back to the electrical grid. This helps stabilize the grid during peak demand times. Some EVs, like the Nissan Leaf, are compatible with V2G technology.
Vehicle-to-Home (V2H):	Technology that allows EVs to power a home, transferring stored energy from the vehicle's battery to the home's electrical system. The Ford F-150 Lightning has V2H capabilities, enabling it to power a house during an outage.

Z

Term	Definition
Zero-Emission Vehicle (ZEV):	A vehicle that produces no direct emissions. EVs are considered ZEVs because they don't burn fuel, thus emitting no tailpipe pollutants. The Tesla Model 3 is a zero-emission vehicle that runs solely on electricity.