

**Are you considering
getting an EV?**

**Here are some items to
help you decide.**

**Do you own an EV and are
tired of answering the
same old questions?**

Let them read this first!

Table of Contents

May 12, 2025

- Types of Vehicle Drive Trains
- Do you Fit one of these Lifestyles?
- Factors to Consider
- EV Features that Drivers like Best
- Special Features of Tesla Vehicles
- EV Facts

Types of Vehicle Drive Trains

ICE - Internal Combustion Engine

These gas and diesel vehicles have been around for more than a hundred years, pollute the air with greenhouse gas emissions and particulate matter. It's a tribute to engineering that these engines work so well with so many moving parts. No longer a good choice.

HEV - Hybrid Electric Vehicle

This is a full ICE vehicle plus a small electric engine/generator and small battery. These were introduced to increase the mileage of ICE vehicles by storing and reusing the energy that would normally be wasted as heat in friction braking. Many years ago, these were a good idea when electric batteries were so expensive, but they really increased the complexity of drive trains. Their time has passed.

PHEV - Plug-In Hybrid Electric Vehicle

This is like an HEV with the addition of charging capability and a larger battery. The idea was to be able to charge up at home or at work and be able to drive as fully electric for 50 km before using the polluting ICE drivetrain. Unfortunately, studies show that most people do not plug in to charge and simply use gas or diesel. This technology adds so much equipment to the ICE vehicle that a PHEV is about six times more likely to have a fire than an ICE vehicle. Not a good idea.

EV or BEV - Electric Vehicle or Battery Electric Vehicle

These are fully electric vehicles that have no combustion engine at all. As technology has improved, the cost of batteries have come down so much that new EVs now cost as little on average as the more traditional vehicles. Before you make your choice, be sure to take a test drive in an EV.

Do you Fit one of these Lifestyles?

Fast Path #1 - If it seems like too much trouble now to investigate EVs, don't worry. The vehicle landscape is changing quickly. If you have a comfortable budget, just make your choice to get through the next few years and come back when you have more time.

Fast Path #2 - If you need space for more than five passengers, tow long distances frequently, or go on frequent road trips, you may need to search out an ICE (Internal Combustion Engine) vehicle (gas or diesel). Just remember to keep from getting locked in for too long.

Fast Path #3 - If you're looking to replace your second car, you have more flexibility to choose an EV. This way, you learn more about EVs without range anxiety. It's best if you can charge at home or at work. If you decide on a used EV, be sure to have the battery capacity checked professionally.

Fast Path #4 - If you have a comfortable budget, there are many new EVs with ranges greater than 300 km. It's likely you'll be happier with any of them than any ICE vehicle. Even used EVs have good ranges.

Factors to Consider

- Initial price - is it in your budget? Be sure to consider federal and provincial incentives on both new and used EVs. Some municipalities and BC Hydro have programs for installing chargers. Some dealers give discounts to VEVA (Vancouver Electric Vehicle Assn) members.
- Total Cost of Ownership - over 5 years, what will it cost, including purchase or lease, fuel, service, maintenance, and insurance less trade-in value?
- How far do you drive each day, on average? Most people drive less than 50 kms per day so an average range of 120 km would be ample.
- Do you take many road trips? Most people take no more than two large road trips a year and another car could be rented for that purpose. Some EV owners exchange their car with a neighbour for long trips.
- What other uses do you have for your vehicle? Do you tow?
- Do you have a location at home or at work where you can charge?
- Do you have friends who have an EV? Consider joining Vancouver Electric Vehicle Association (VEVA.CA) for unbiased, experienced advice from volunteers
- If you have never driven an EV, you owe it to yourself to see what it's all about.
- Also, no matter what you think about Tesla or its founder, check out the "Special Features of Tesla Vehicles" later in this pamphlet.

This pamphlet is compliments of the Vancouver Electric Vehicle Association. For comments and questions, contact Wally Kunz, 604 817-4727, wally.kunz@veva.ca.

EV Features that drivers like best

1. Quiet - no loud combustion noises
2. Fresh #1 - no gas fumes; no motor oil odours
3. Fresh #2 - no exhaust smells
4. Quick - instant torque at all speeds
5. Safer - easy to get out of tricky situations at any speed
6. Saves energy - regenerative braking. Even pressing the brake pedal increases regenerative braking before using friction braking on the brake pads.
7. Relaxing - one pedal driving
 - a. no gears, so no clutch pedal
 - b. regenerative braking, so barely need a brake pedal
 - c. one pedal accelerator: press to speed up, lift to slow down.
8. No carbon emissions from electric motor - more sustainable
9. No particulate emissions from electric motor - healthier
10. Having a full 'tank' of electrons each morning - Passing gas ... stations
11. Lower total cost of ownership - less service, less maintenance, lower fuelling costs
12. No range anxiety - many fast DC superchargers
13. Batteries last as long as the car; warranted for at least 8 years or at least 70% capacity - then reusable as stationary batteries and finally can be 95% recycled
14. Great interior space - no engine, transmission, exhaust, or big radiator
15. Easy to be courteous to pedestrians and other drivers - lift off the accelerator and then press when clear. No energy wasted as heat in friction braking.
16. No catalytic converter to be stolen - no cost or inconvenience
17. No nasty oil slicks in the garage or driveway.
18. Air conditioned car in a heat wave when the grid goes down. A heated car in a cold snap when the grid goes down. A quiet place to read when the grid goes down.
19. Always starts no matter how cold it gets. The range is reduced, but you're not stuck in a freezing ICE car where it's very cold.
20. Access to HOV lanes
21. Special credits from governments for new and used EVs.
22. A more green lifestyle
23. Just more fun to drive.

Special Features of Tesla Vehicles

Teslas have been engineered with special features not yet available in ICE cars or other EVs

1. Teslas are the safest cars of any kind. Safety is the top design criteria.
2. Over The Air updates (OTA) to improve features after purchase. Many are free. Improved battery management, more games, fun light shows and "methane emission tests", better braking and acceleration.
3. Supervised Full Self Driving. Long drives are less tiring since you don't need to be constantly on alert, just supervise the car's self driving.
4. The Total Cost of Ownership of a Tesla Model 3 after five years is cheaper than a Toyota Corolla. Initial cost is higher, but service, maintenance and fuelling is much less.
5. Tesla's supercharger system is the largest and most effective in the world. Other manufacturers are starting to join the supercharger network.
6. Tesla has a referral program to give a discount if you include a referral code from an existing Tesla owner.
7. "Soon" Tesla vehicles will have unsupervised Full Self Driving so older owners will still have mobility when they are no longer able to drive.

EV Facts

Range Anxiety

- Most EVs have a range of over 480 kms (300 miles).
- Before you run out of range, you'll want to take a break for nourishment or washrooms. Charge up then.
- Connecting and disconnecting at a charger takes far less time than fuelling with gas or diesel.
- It's easy to plan trips with supercharging stops

Battery Life

- In North America, EVs have a warranty of eight years for 70% capacity.
- If your car battery needs to be replaced after 8 years, the cost is reduced by its value as a stationary battery.
- Battery capacity is only important in the city if you drive more distance than you can charge overnight or at work.
- When depleted, over 95% of battery materials can be recycled.

Supercharging your EV

- All Teslas and many other EVs now have access to the Tesla supercharger network with the NACS (North American Charging Standard) port. There are more supercharger plugs in North America than there are gasoline/diesel pumps.
- Both Tesla and other companies are installing superchargers faster than ever

Battery Materials

- The elements needed in batteries can be mined on all continents. The current problem is that many of the processing plants are centralized in China.
- Even now, batteries from laptops, phones, and other electronic devices can be recycled.
- As car batteries get to be older than 10 - 12 years, more will be able to be recycled, saving money over newly mined materials.
- Many new batteries, such as LFPs, do not use any nickel or cobalt.

Total Cost of Ownership

- The average cost of a new EV is less than the average cost of a new ICE vehicle.
- Fuelling an EV is generally less than ¼ the cost of gasoline/diesel. In BC, hydro energy is even cheaper.
- Almost no maintenance is required since lubricants do not need to be changed and regenerative braking uses the electric motor, not the brake pads.
- Used EVs are surprisingly cost effective. Especially since there are fewer moving parts to wear out than in ICE vehicles.

EV Driving Safety

- Batteries, the heaviest part of an EV, are generally placed under the floor, making a very low centre of gravity, reducing the possibility of a roll over.
- The battery pack is very rigid, reducing the possibility of intrusion in a crash.
- With no heavy internal combustion engine in front, the front crumple zone is quite large and will slow deceleration in an accident.

Fire Risk

- EVs have the least risk of catching fire of any vehicle type. Earlier problems seem to be resolved. When there is a thermal runaway (fire) in a battery cell, it does not explode but may extend to nearby cells. Fire departments now have better fire suppression techniques.
- ICE vehicle fires are very explosive but no longer make the news because they are so common.
- Hybrid vehicles (a combination of ICE and EV) are even more common than ICE fires since they have both drive trains compressed into a smaller space.

Greenhouse Gas Emissions (CO₂)

- EVs generate no CO₂ since they do not burn fuel.
- CO₂ generation at electricity plants becomes smaller as more coal, gas, and methane plants are being shut down. Solar farms and wind farms are much cheaper to build and operate.
- While creating batteries generates more CO₂ than building the rest of the car, within a year and half, the total CO₂ from building and running an EV is less than from building and running an ICE vehicle.

Particulate Emissions

- EVs generate no particulate materials from burning fuel or from braking.
- Particulate emissions from tires is similar to ICE vehicles since the weight of the vehicles are very similar.

Grid Capacity

- In order for all vehicles to be electric, the grid needs to be replaced and expanded. Engineers are working on the capacity and should be able to keep pace with the increase in electric vehicles.
- With stationary batteries, electricity can be stored at times of lower usage (and cost), reducing strain on the grid.
- Adding solar panels, homes and businesses can further limit strain on the grid.

This pamphlet is compliments of the Vancouver Electric Vehicle Association. For comments and questions, contact Wally Kunz, 604 817-4727, wally.kunz@veva.ca.