Why should you consider an EV?

After years of misinformation spread by the fossil fuel industry, electric vehicles (EVs) are not well understood. Electrification alone won't solve all of our problems. To reduce our environmental impacts we need to reduce consumption and move away from a car culture, but there is a solution that is here and is starting to make a difference today.

We need to reduce dependency on cars by promoting better public transportation, pedestrian and bicycle accessibility. We also need to lobby for better fuel efficiency for internal combustion engine (ICE) vehicles and promote the electrification of cars, trucks and busses.

Canada is the only G7 country without a National Transportation Strategy. We face extremely limited options in many regions when it comes to getting around. One excuse that we hear all the time is that Canada is a big country that is sparsely populated. However, European and Asian countries coordinate train and bus routes so that people can easily and efficiently travel between regions and countries. Air travel is not the default option in many places. Our train systems are antiquated and slow given that, on the majority of routes, infrastructure is shared with freight trains which are given priority over passenger service. Our intercity bus options have been reduced since the demise of Greyhound in Canada and urban transit systems are struggling, Ottawa being an example.

In Canada the transportation sector contributes significantly to greenhouse gas pollution, accounting for approximately 22% of the country's total emissions. This includes emissions from trains, ships, and airplanes. However, the majority of these emissions are from gas and diesel-powered cars, trucks and buses. By comparison, 30% of emissions comes from the oil and gas sector while agriculture contributes 10%.

In summary, there is an opportunity for Canada to embrace more electrification of the transportation sector and contribute to our goal of reducing emissions. Choosing an EV instead of an internal combustion vehicle is a great first step in contributing to our shared climate goals as well as enjoying the benefits of EV's (always charged, reduced ongoing cost, fun to drive, etc.).

Canadian Transportation Emissions, Reductions, and Quantification
https://brightspot.co/library/canadian-transportation-emissions-reductions-and-quantification/

Concerns and misconceptions about electric vehicles:

1. ***Electric vehicles are terrible in the winter***

It's true that high speeds and cold temperatures eat away at EV range. This is also true for ICE vehicles' range but it's not as noticeable. Driving at the speed limit, especially

when it is cold, helps. Also consider turning down the temperature in the vehicle. Heated seats and steering wheels can help warm you up more efficiently and wear warmer clothes while driving.

Many EVs now come with heat pumps which help mitigate reduced range in cold weather by reducing demand on the battery to heat the interior of the vehicle. New technologies are available to precondition the battery and prewarm the cabin while the car is plugged in before starting a trip. This extends the range and provides a heated interior when starting a journey. Software and battery improvements are also helping to extend vehicle range in cold weather. Real use experience shows negligible battery degradation after several years of use.

2. ***Electric vehicle manufacturing is terrible for the environment***

Science tells a different story – from manufacturing to disposal comparing emissions between ICE and EVs – by and large driving an electric vehicle is a massive win for the environment and this holds even when electricity is generated using coal and natural gas.

There is a heftier initial cost for building an EV. Mining cobalt, refining the lithium and creating the cells that fit into battery packs is energy intensive and creates significant greenhouse gas emissions. This results in 33%-57% greater emissions than the manufacturing of a comparable ICE vehicle according to the International Energy Agency.

To compensate for this upfront environmental cost, EVs are much more efficient. They are powered by electric motors with single speed transmissions that lose much less energy to friction and heat than an ICE vehicle. They are cleaner to operate and repay the environmental debt relatively quickly.

As per the Union of Concerned Scientists (UCS) – an electric car with 300 mile range compared to an ICE vehicle with 32 mpg slashes a driver's greenhouse emissions by 52% based on the 2020 US electrical grid which was far from being 100% renewable. The tipping point is at 21,300 miles or approximately 34,000 km.

The International Council on Clean Transportation (ICCT) estimates that a medium sized EV registered in the US in 2021 polluted 60-68% less over its life time than an ICE vehicle presuming that the grid becomes cleaner over time. EVs are much more efficient than a gas vehicle. EVs convert energy into motion with minimal losses, electric motors exhibit 90% energy efficiency while a combustion engine loses 70% of its energy to heat.

Also to note, given that ICE cars need repairing there is also a greenhouse gas cost related to the manufacturing and transportation of replacement parts that exceed those costs associated with an electric vehicle.

Plug In BC
https://pluginbc.ca/electric-vehicles-and-emissions/

Anthropocenemagazine.org – a study done at Yale and reported in *Nature Communications*
https://www.anthropocenemagazine.org/2022/01/evs-crush-combustion-cars-even-when-weighing-emissions-from-battery-and-electricity-production/

Nature Communications
https://www.nature.com/articles/s41467-021-27247-y

3. ***Metal used in EV batteries are mined in countries where human rights abuses occur***

Child labour is used in lithium and cobalt mining. Canada introduced the *Fighting Against Forced Labour and Child Labour in Supply Chains Act* which came into force on January 1, 2024. Companies are required to provide information about what they are doing to prevent and reduce the use of forced and child labour in its business and supply chains to the federal government in annual reports.

In Canada, Canada's *Critical Minerals Strategy,* includes recycling in addition to extraction. In the European Union, from 2024 onward new rules were brought in to require increasingly more used batteries to be recycled and increasingly larger amounts of valuable minerals, including cobalt and lithium to be recovered. Individual corporations have also been seen to switch their supply chain. BMW relocated their supply chain to source materials from Morocco, and the remainder from Australia to supply their batteries from 2020 onward.

By 2024 many automakers were using cobalt-free lithium iron phosphate (LFP) batteries. Also battery recycling efforts can reduce the need to mine these materials in car batteries.

Cobalt is not only a concern in vehicle batteries. Bigger culprits are portable consumer electronics, cell phones and laptop batteries. Cobalt is also used by fossil fuel companies in their desulphurization process of refining oil.

CAFES Ottawa
https://cafesottawa.ca/addressing-climate-misinformation/

Plug in BC
https://pluginbc.ca/an-introduction-to-electric-vehicles-and-cobalt/

4. ***EV tires wear faster and cause more tire pollution***

Because EVs are heavier and due to greater torque, they accelerate more quickly than their ICE counterparts, tire wear is an issue. To compensate tire makers and suppliers of

polymers and other ingredients are developing new elastomers and introducing new materials that enhance tire wear reducing shredding and increase tire longevity.

Tire production uses roughly 400 chemicals. As tires wear down tire particles are released into the air which can cause heart, lung, developmental, and reproductive problems as well as cancer in humans, according to an Imperial College London report, while one chemical called 6PPD-quinone has a devastating effect on marine life.

According to Emissions Analytics, a private company founded by Nick Molden, cars in the U.S. emit, on average, 5 pounds of tire particles a year, while cars in Europe, where fewer miles are driven, shed 2.5 pounds per year. Moreover, tire emissions from electric vehicles are 20 percent higher than those from fossil-fuel vehicles.

As per The Guardian, see the reference below, the claims above by Emissions Analytics are not peer reviewed by scientists and industry disputes the findings.

As per the Guardian “Crucially, all cars produce those pollutants – not just electric versions. Measuring tiny particulates is very difficult, and there are relatively few comparative studies so far. That means that there is still uncertainty over whether the extra weight of EV batteries will result in worse particulate pollution.” It is clear, however, that all driving, including ICE/delivery/transport vehicles, have tires that increase air quality problems. More study needs to be done on how to mitigate these negative aspects of transportation.

Nevertheless, to reduce tire pollution drivers can cut down on tire shedding by changing driving behaviour. Don’t accelerate quickly, which is easy to do in an EV, as quick acceleration can increase the rate at which tires shed microparticles. Slowing down also decreases tire pollution and tire wear.

Chemical and Engineering News
https://cen.acs.org/materials/polymers/Tire-makers-strive-fix-electric/102/i20

Sierra Club
https://www.sierraclub.org/sierra/2024-2-summer/material-world/evs-pollution-tailpipe-tires

Recharged
https://recharged.com/articles/ev-tire-pollution?srsltid=AfmBOooxzEs05t_ar5l6guAyR63bBpuh5sD4Gqn_HTFus_9-BIJFFXX1

The Guardian
https://www.theguardian.com/business/2024/feb/26/electric-cars-air-pollution-problem-brakes-tyres

5. ***EVs are expensive to purchase and repair***

EVs are becoming cheaper as new models are introduced and range is improving along with battery design and technology. There are many more choices than even just 2 or 3 years ago. See the Transport Canada list of affordable EVs and the 2026 subsidy amounts to get an idea of options. Also as more used EVs are becoming available they provide an affordable alternative to ICE vehicles and recently with rising gas prices the cost of ownership of an EV can be cheaper than that of an ICE vehicle.

EVs require much less maintenance than ICE vehicles. They don't require oil changes and they have a lot less parts - engines, exhausts or transmissions. Many EVs have modems which means that any software updates are done remotely cutting down on the number of times that you need to return to a dealer.

Because many EVs offer one pedal driving, the vehicle's brakes do not get a lot of use. As the driver lets up on the pedal the car slows as regenerative braking takes hold and the energy is sent back to the battery. On some models the car comes to a full stop and the brake pedal is only used occasionally when a quick stop is required. This reduces wear on pads and rotors brake components. Certainly key components of the braking systems (rotors and pads) need to be changed much less frequently on an EV although the rotors and pads may need to be cleaned regularly if the brakes are infrequently used.

When EVs do need servicing it may require a longer wait time than for a gas powered vehicle. The dealer or garage may not have enough technicians trained to repair electric vehicles. This should become better over time as more electric cars are introduced. This is already happening in Quebec and BC where electric car adoption is greater than in other areas of Canada.

There is a lot of concern that has been generated around battery life. As more real world data has become available this concern is diminishing. Batteries are performing much better than expected. After 3.5 years a Ford Mustang Mach E with over 80,000 kilometres is, for example, showing a 95% battery health.

6. ***EV batteries are not being recycled***

Work is underway to improve and expand battery recycling

Battery recycling is going to be important. Lithium ion batteries are 95% recyclable and contain not just lithium but nickel and cobalt. These metals hold their value beyond the life of the battery.

Glencore recycles electronics and there is a smelter in Noranda Quebec that does copper recycling and they had invested in Li-Cycle Holdings to get into the EV battery recycling business. Li-Cycle went bankrupt and Glencore bought its assets in May 2025.

Li-Cycle was supposed to get money from DOE under Biden's but it looks like this fell apart in spring 2025. There is no national framework for EV battery recycling. The European Union introduced critical mineral recycling regulations in 2023. Regulations can dictate a percentage of recycled materials required in newly manufactured batteries. This creates a market for recyclers to participate.

Canadian Renewable Energy Association
https://renewablesassociation.ca/wp-content/uploads/2025/01/CanREA-factsheet-Recycling-batteries.pdf

It looks like there are some recyclers:

Lithion Technologies is in Quebec and according to their website they recycle EV batteries. They create black mass from EV batteries.

https://www.lithiontechnologies.com/en/solutions/recycle-your-batteries/

Electra Battery Materials in Ontario looks like it is in the process of being set up for battery recycling. It successfully trialed black mass creation in 2022-23 but they aren't offering commercial capacity yet.

https://www.electrabmc.com/news-releases/news/

A metro Vancouver startup company, Moment Energy, has found a niche in repurposing used electric vehicle batteries for use in backup power and energy storage. It is currently in the process of building a production facility in Surrey to take used batteries, test and recondition them, then reassemble the batteries as lego-like components for 500 kilowatt-hour stationary power units. This is enough electricity. To power the basic needs for up to 50 homes.

Conclusion

Overall, it is clear that concerns with EV's are outweighed by the advantages (cost of charging, battery life, fun to drive, etc.) over ICE vehicles. The transportation system in Canada needs to better integrate public transit, improve the rail system, and encourage municipalities to purchase electric buses, police, ambulance and public vehicles. This will save money in the long run as well as reduce the transportation emission footprint.
.