

ELECTRIC Vehicle **NEWS**

What's Out There?



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Questions to Ask Before Buying an Electric Car

Does the car have enough range?

This is less of a problem than it was a few years ago. (See the range information on pages 2-3.) Still, you'll want to make sure a given model's range is enough for your daily commute and weekend activities. It pays to overestimate your needs because your mileage will vary. The winter cold and summer heat with air conditioning will reduce the range.



Does it have the features you need?

These are the standard questions you ask yourself no matter what kind of vehicle you are buying. Does it fit your budget? Does it have enough seating and load capacity? Is it equipped for winter driving?

Test drive to see if it is comfortable and easy to operate.

Where and how will I charge my vehicle?

It's far more convenient and cheaper – to juice up an EV at home. There are 2 ways:

- **Level 1** - simply plug the vehicle into a standard 110-volt wall outlet but it can take anywhere from 8 to nearly 24 hours.
- **Level 2** - have an electrician install a 240-volt service in your garage or outside that can charge in as little as 4 hours.

Public chargers are typically installed in parking lots, gas stations and car dealerships. While most of these are the Level 2 type, look for the ones providing **Level 3** charging or *DC Fast Charging*. This can bring an EV's battery up to 80 percent in 30-60 minutes.

Websites and free apps are available to help you find the nearest charging station, such as:

- [Plugshare.com](https://www.plugshare.com)
- [ChargeHub.com](https://www.chargehub.com)
- Electrify Canada App
- Tesla App

Are there Government incentives?

Since 2019, the Canadian government has offered purchase incentives of up to \$5,000 for eligible vehicles through Transport Canada's **iZEV program**, which has helped Canadians purchase or lease over 136,000 new EVs.

How long do I plan on owning this EV?

An EV can pay for itself if you plan to keep it long enough. It's true that EVs cost more but the savings on fuel and maintenance adds up quickly.

What about insurance?

Insurance costs for EVs run in the same range as conventional gas-powered cars. Be sure to check with your insurance provider.

See a sample of EVs on the market on pages 2 & 3.

	Vehicle Model and Type	Brand	Features	Release Date (CDN)	MSRP (CAD) <i>Manufacturer's Suggested Retail</i>
	Chevy Bolt LT	Chevrolet	Front wheel drive, 200 horsepower, 266 lb-ft of torque, 0-100 km/h in 6.5 s, 145 km/h top speed, 5 seats, 17 cu ft of storage, 4166 mm length, 1765 mm width, 1595 mm height.	2016	\$38,198
	Honda e (Standard)	Honda	Rear wheel drive, 0-100 km/h in 9.0 s, 145 km/h top speed, 315 Nm of torque, 6 cu ft of storage, 3894mm long by 1752 mm wide by 1503 mm tall, 342 kg max payload, 4 star safety rating, 4 seats.	2024	\$48,200
	Hyundai Ioniq 5 Essential	Hyundai	350 Nm of torque, 0-100 km/h in 8.5 s, RWD, 3000 mm wheelbase, 4635 mm length, 1890 mm width, 1605 mm height.	2022	\$46,946
	Hyundai Kona Electric Preferred	Hyundai	0-100 km/h in 7.6s, 167 km/h top speed, front wheel drive, 201 hp, 5 seats, 4180 mm length, 1800 mm width, 1565 mm height, 12.7 cu ft of storage.	2019	\$45,846
	Kia EV6 Long Range RWD	Kia	RWD, 225 hp, 258 lb ft of torque, 2900 mm wheelbase, 4880-4695 mm length, 1880-1890 mm width, 1550 mm height.	2022	\$44,995
	Kia Niro EV EX	Kia	167 km/h top speed, 0-100 km/h in 7.6 s, 291 lb-ft of torque, front wheel drive, 16 cu ft of storage, 5 seats, 493 kg payload, 4375 mm length, 1805 mm width, 1570 mm height.	2018	\$44,995
	Kia Soul EV Limited	Kia	201 hp, 5 seats, front wheel drive, 11 cu ft cargo space, 498 kg payload, 4195 mm length, 1800 mm width, 1605 mm height, 2180 kg gross vehicle weight (GVWR), 145 km/h top speed, 0-100 km/h in 7.9 s.	2014	\$42,995
	Mini Cooper SE Countryman ALL4	MINI	0-60 km/h in 3.9s, 181 horsepower, 199 lbs-ft of torque, 150 km/h top speed, 4 seats, front wheel drive, 3850 mm length, 1727 mm width, 1432 mm height.	2020	\$44,356
	Nissan Leaf S Plus	Nissan	5 star safety rating, front wheel drive, 15.4 cu ft of cargo space, 490 kg max payload, 5 seats, 0-100 km/h in 7.3 s, 157 km/h top speed, 320 Nm of torque, 4490 mm length, 1788 mm width, 1530 mm height.	2010	\$40,098
	Nissan Leaf SV	Nissan	5 star safety rating, front wheel drive, 15.4 cu ft of cargo space, 490 kg max payload, 5 seats, 0-100 km/h in 7.9 s, 144 km/h top speed, 320 Nm of torque, 4490 mm length, 1788 mm width, 1530 mm height.	2010	\$37,498
	Volkswagen ID.4 Pro AWD	Volkswagen	201 horsepower, AWD, 0-100 km/h in 7.7 s, 310 Nm of torque, 160 km/h top speed, 5 seats, 4584 mm length, 1852 mm width, 1631 mm height, 611 kg payload, 19 cu ft of storage.	2021	\$44,995

Models over \$50,000 and those unavailable in Canada are not listed in this chart:

- Audi e-tron Progressive 55 quattro (19)
- Ford Mustang Mach-E RWD Select (18)
- Hyundai Ioniq 5 Preferred Long Range (17)
- Jaguar I-Pace HSE (23)
- Polestar 2 Long Range Single Motor (3)
- Porsche Taycan 4S (22)
- Tesla Model 3 Base Model (1)
- Tesla Model S (12)
- Tesla Model X (15)

Model Price	Vehicle Range in km (Summer)	Vehicle Range in km (Winter)*	Cold Weather Performance Info (if available)	Dealership Network and Alberta Locations
	417	271*	No reported issues except reduction in range.	There are many GM dealerships worldwide including multiple in Alberta (Fort McMurray, Edmonton, Okotoks, Sherwood Park, Wetaskiwin, Stony Plain, Leduc, Calgary, St. Albert, Fort Saskatchewan, Airdrie, Claresholm). Chevrolet has online support and phone call support as well.
	220	140	No major issues (only reduction in range according to consumer reports).	Locations available world wide including several in Alberta (Edmonton, Sherwood Park, St. Albert, Grande Prairie, Calgary). Roadside service is available as well.
	354		Comes with a built-in heat pump battery heating system to minimize range loss in cold climates.	Many locations worldwide including in Alberta (Sherwood Park, Edmonton, Leduc, Grand Prairie, Calgary, Red Deer, Medicine Hat). Roadside assistance is available as well.
	415	335	Built-in system pre-warms battery while charging and heat pump system that warms vehicle mechanics and cabin with minimal energy usage.	There are many locations worldwide including many in Alberta (Sherwood Park, Edmonton, Leduc, Grand Prairie, Calgary, Red Deer, Medicine Hat). Roadside assistance is available as well.
	499		Small reduction in range; a built in heat pump recycles hot air to warm battery if necessary.	Found worldwide including in Alberta (Edmonton, Calgary, Red Deer, Medicine Hat, Lethbridge, Cold Lake, Grande Prairie). Kia also has a Consumer Assistance Call Center.
	425	310	The Niro has an electric coolant-heater to warm the battery, but still faces a range reduction in cold temperatures.	Found worldwide including in Alberta (Edmonton, Calgary, Red Deer, Medicine Hat, Lethbridge, Cold Lake, Grande Prairie). Kia also has a Consumer Assistance Call Center.
	383	310	No reported issues except reduction in range.	Kia locations can be found worldwide including in Alberta (Edmonton, Calgary, Red Deer, Medicine Hat, Lethbridge, Cold Lake, Grande Prairie). Kia also has a Consumer Assistance Call Center.
	183	130	No major issues (only reduction in range)	There are dealerships found worldwide including two in Alberta (Edmonton, Calgary). MINI also has email support, phone support and online chat support.
	363	275	There is a reduction in range but no other reported issues.	Nissan dealerships are found worldwide including multiple in Alberta (Edmonton, Sherwood Park, Red Deer, Leduc, Calgary, Okotoks, Cochrane, Lloydminster, Medicine Hat and Grand Prairie). Nissan also has a Consumer Assistance Call Center.
	240	185	There is a reduction in range but no other reported issues.	Nissan dealerships are found worldwide, multiple in Alberta (Edmonton, Sherwood Park, Red Deer, Leduc, Calgary, Okotoks, Cochrane, Lloydminster, Medicine Hat and Grand Prairie). Nissan also has a Consumer Assistance Call Center.
	422	330	The European version does not contain a heat pump; unknown if North American version will have one. No severe reported issues other than reduction in range.	These dealerships are found worldwide (mainly North America and Europe) including many locations in Alberta (Edmonton, Sherwood Park, Calgary, Grande Prairie, Lethbridge). Also offers online/call in customer care.

- Tesla Model Y Long Range (14)
- Tesla Roadster (21)
- Toyota bZ4X (26)
- Volvo C40 Recharge Twin (25)

- Volvo XC40 Recharge Core (24)
- Not in Canada
- BMW i3 (13)
 - Dacia Spring Electric (20)



About EV Charger Connections

Currently, there are three well known types of charger connections:

Tesla Supercharger:

A 480-volt direct current fast-charging technology built by American vehicle manufacturer Tesla, Inc. for electric cars.



- Only compatible with Tesla vehicles.
- V2 (current model) can charge at up to 150 kW at a voltage of 480 V.
- V3 (in development) will be able to charge at up to 250 kW.

SAE Combo - Combined Charging System (CCS):

A standard for charging electric vehicles, which uses the Combo 1 and Combo 2 connectors to provide power at up to 350 kilowatts.



- Many EV charger manufacturers use this model.
- Common worldwide.
- Combines AC and DC to charge.
- Currently can be manufactured at several different powers up to 350 kW.

SAE J1772:

Also known as a J plug, this is a North American standard maintained by the SAE International



This model has 3 types of charging:

- AC level 1 - 1.92 kW.
- AC level 2 - 19.2 kW.
- DC level 1 - 80 kW.

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How to Save Money: Electric Vehicles As An Investment

The Bottom Line:

Electric vehicles (EVs) cost approximately \$23,000 CAD more than an equivalent gas vehicle (or ICE - internal combustion engine).

If you include the iZEV Canadian subsidy of \$5,000 CAD, the difference becomes \$18,000 CAD.

However:

Over the vehicle's lifetime of 15 years when driving an annual 25,000 km, you will **SAVE** money.

For the average Albertan, you will **SAVE**:

- approximately \$1,200 CAD on fuel annually
- an estimated \$600 CAD on maintenance annually
- approximately \$27,000 CAD over the lifetime of the vehicle (one life cycle)



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If you can charge with Solar Energy, you can save even more:

- approximately \$2,000 CAD on fuel annually
- an estimated \$600 CAD on maintenance annually
- approximately \$39,000 CAD over the lifetime of the vehicle (one life cycle)

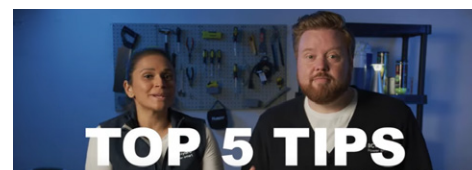
For More Info:



Article: Edmunds' EV Buying Guide



Website: Plug 'N Drive - Interactive EV Catalogue



Video: 5 Things You Need To Know Before Buying An Electric Vehicle - BC Hydro (BC content but useful)



Video: A Guide To Buying Used Electric Vehicles - BC Hydro (BC content but useful)





Name: _____ Class: _____

Buying An Electric Car? (___/15 pts)

CHECKPOINT (10 points)

- Two things that can reduce the range of an EV are _____ and _____.
- Level 1 charging uses a standard 110-volt wall outlet and can take from _____ to _____ hours.
- Level 2 charging uses a special 240-volt service but only takes _____ hours to charge.
- Electric vehicles (EVs) cost approximately \$ _____ CAD more than an equivalent gas vehicle (or ICE - internal combustion engine).
- The Canadian Government iZEV Program can provide up to \$ _____ CAD, towards a EV.
- Over the vehicle's lifetime of 15 years, the average Albertan will save \$ _____ on fuel and \$ _____ on maintenance with an EV.
- There are currently _____ types of charger connections.

What IF? (5 points)

If you just won a free electric car and could choose any from page 2 - which would you select?

List 3 features of that car:

What is the vehicle's range in the summer?

INTERNET CHALLENGE (___/15 pts)

Do some research on the internet to find out more about electric vehicles.

- What is "range anxiety"? (2 points)

- Where are the closest public electric vehicle charging stations nearest to YOU? (Include how many if they are close to each other.) Check the two sites listed below as well as any other sources you find. (5 pt.)

[Plugshare.com](https://www.plugshare.com)

[ChargeHub.com](https://www.chargehub.com)

- Visit the website: (8 points)

[Plug 'N Drive -
Interactive EV Catalogue
https://ev.plugndrive.ca/vehicles/](https://ev.plugndrive.ca/vehicles/)



Try selecting a car. PRESS Match Score button and record what you selected for:

Round trip commute: _____ km

Budget: _____

Seats _____

Home Charging: _____
(press ? if you need help)

Fuel: _____

Type: _____

(For Make - try ALL)

Now Sort by Price - Low to High

What was the first vehicle the website suggested?

(Make and Model) _____

Click the image of the vehicle, scroll down and find out what the CO2 EMISSIONS REDUCTION is:

TEACHER RESOURCE: Buying An Electric Car?



Checkpoint Answers

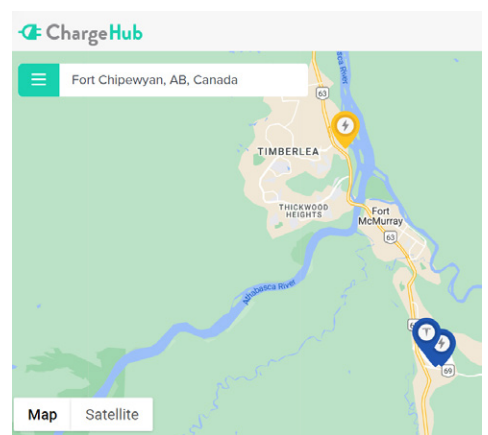
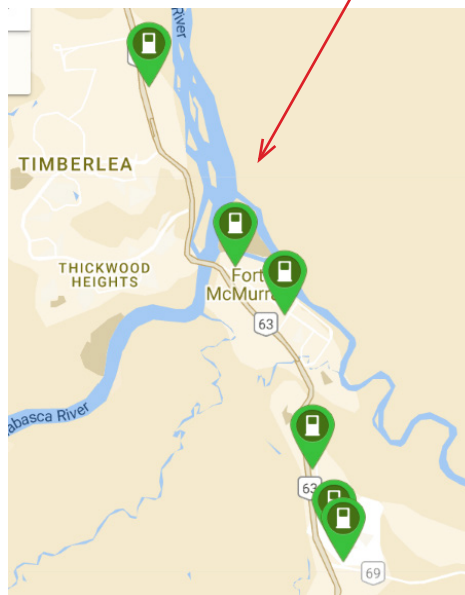
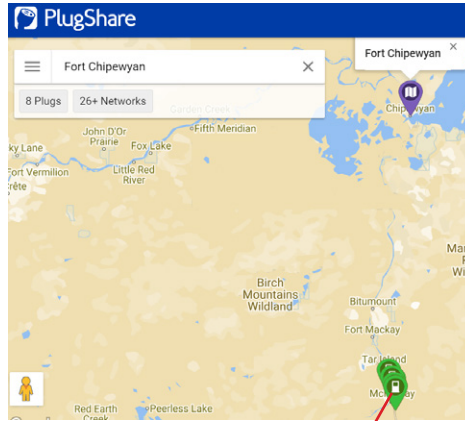
- winter cold, summer heat (air conditioning)
- 8, 24
- 4
- \$23,000
- \$5,000
- \$1,200, \$600
- 3

What If Answers

Answers will vary

Internet Challenge

- Worry on the part of a person driving an electric car that the battery will run out of power before the destination or a suitable charging point is reached.
- Both websites show the nearest charging stations to Fort Chipewyan are in Fort McMurray. (See images at right.) ChargeHub shows 4 and PlugShare shows 6. Students may find others as well (bonus points).
- Answers will vary - see sample screen below and at right.



Chevrolet Bolt EV

Cash Loan Lease

AFTER INCENTIVES \$33,198

MSRP \$38,198 ESTIMATED INCENTIVES \$5,000

Learn More View All Cars

TYPE Hatchback	MINIMUM SEATS 5
FUEL TYPE BEV	ELECTRIC RANGE 417 km
KILOMETERS PER 30 MIN OF FAST CHARGING ~ 139 km	TIME TO CHARGE - LEVEL 2 ~ 8 hr 25 min
BATTERY SIZE 65 kWh	CO2 EMISSIONS REDUCTION 3,636 kg/yr
TREES PLANTED 165,273	GASOLINE SAVED 1,800 L/yr

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<p>Refine Match Score</p> <p>Roundtrip Commute</p> <p>150 Kilometers</p> <p>Budget after Incentives</p> <p>\$30,000</p> <p>Personalize Incentives ></p> <p>Minimum Seats</p>	<p>Chevrolet Bolt EV</p> <p>Electric Range 417 km</p> <p>Estimated Incentives \$5,000</p> <p>MSRP \$38,198</p> <p>MATCH SCORE 95 / 100</p>	<p>Nissan LEAF</p> <p>Electric Range 240 km</p> <p>Estimated Incentives \$5,000</p> <p>MSRP \$39,498</p> <p>MATCH SCORE 87 / 100</p>	<p>Chevrolet Bolt EUV</p> <p>Electric Range 397 km</p> <p>Estimated Incentives \$5,000</p> <p>MSRP \$40,198</p> <p>MATCH SCORE 91 / 100</p>
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