EV’s Make Cents

Presented by: NBP Climate Action and Waste Diversion Committee

Contents

- 7:00 The Climate Action and Waste Diversion Committee – Mike Campbell
- 7:10 Why Choose an EV? EV's 101 – Glen Estill
- 7:45 EV Owners Panel
- 8:10 Q+A

Why Choose an EV?

- **Simplicity!**
- **Environment:** Emissions drop by 80–90%
- **Efficiency:** 95% for EV vs 25% for Internal Combustion Engine (ICE)
- **Lower Costs:** **Fuel costs can be up to 90% lower, and the simplicity significantly reduces maintenance time and expense**
- **Performance:** Smooth, quiet ride with fast acceleration
- **Global Security:** No war required

A New Fueling Mindset

- **Home-Base Charging:** 80% of your charging occurs at home, meaning you leave every morning with a "full tank"
- **Local vs. Long Distance:** You will almost never need a public charging station for local trips
- **Strategic Stops:** Public high-speed chargers are reserved for long road trips

Cannot emphasize this enough!

Uses of Energy in Vehicles

- Rolling resistance – tires
- Momentum – 0 – 100 km
- Wind resistance – increases with cube of speed
- Cabin heat – waste is used with ICE vehicles
- Battery conditioning – bringing the battery system to a suitable operating temperature

How EV Makers Maximize Range

- Aerodynamics – recessed door handles, careful design of mirrors, wiper blades, design of body
- Regenerative braking – recaptures energy of motion
- Heat pumps to improve winter range
- A heat pump uses 1/3 of the energy of a normal resistance electric heater
- Heated steering wheel and heated seats

Understanding Charging Levels

Home Charging

- **Level 1 (110V):** Slow; adds about 5–8 km of range per hour. 100 km over 12 hours, regular home outlet – 30 + hours to charge
- **Level 2 (220V):** Medium; uses a "dryer plug." Adds 40–60 km of range per hour, the standard “overnight” charge

Road Trip Charging

- **Level 3 (Fast):** Used for road trips to add significant range in minutes
- Standards: NACS (North American Charging Standard) is becoming the industry norm for reliability and access

Home Charging

- Home charging is least cost (by far)
- Most charging is done at home
- Probably want a 220V circuit – dryer plug
- All local electricians have done these
- Average cost ~$1300, but it depends on the location and availability of 220 V circuit

- Some people can get away with a 110V plug!

Home Charging for Free?

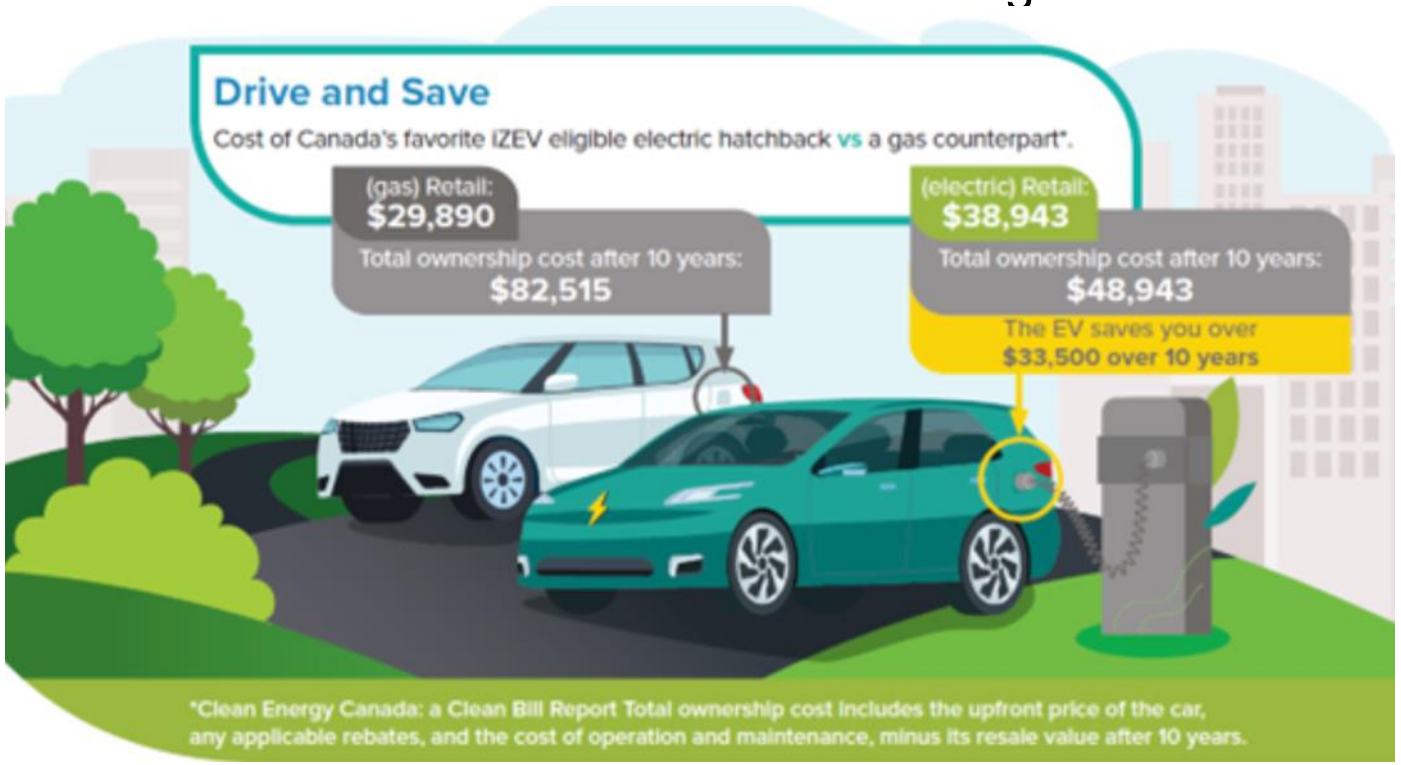
- There are companies that provide a free charger and pay you to use it!
- How? Clean Fuel Regulation credits – supplier acts as a consolidator, and pays some of it to you
- You get a free charger, you pay freight, installation, and have WIFI connection available.
- Pays 3-10 cents/kWh, with higher amounts for higher users.
- Ideal for Uber driver, long commuter etc.
- Eg. Grizzl-E Club – Canadian made www.club.grizzl-e.com/en

History of High Speed Charging

- In the beginning Japanese Chaedmo
- Europe CCS
- Delays in improvements resulted in Tesla acting on their own to make Tesla
- Tesla installed the very best charging network
- Tesla renamed North American Charging Standard – NACS
- NACS is pretty much standard on new North American cars from 2025
- Ford started the conversion to NACS by the rest of the industry
- Adapters may be available

Objection Overruled: ”EVs are too expensive."

- Total Lifecycle Cost: When including fuel and maintenance, EVs are usually the more affordable option over the life of the car
- Daily Savings: Travel 100 km for as little as $1 in fuel costs
- Market Options: There is now a robust used EV market for those looking for a lower entry price



Source: [Gov’t Canada Website]

EVAP Federal Rebate

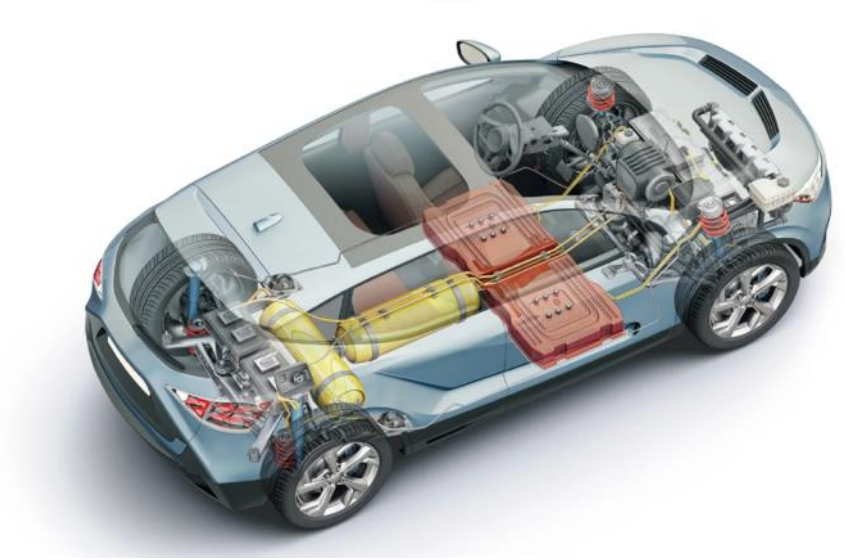
- $5,000 for qualifying cars in 2026
- Must be made in Canada or made in a country that Canada has a free trade agreement with
- Must be under $50,000 or made in Canada
- Amount is deducted from the purchase price – no waiting for a cheque
- Up to $2,500 for certain plug-in hybrid vehicles
- Rebate will decrease over time
- Check out the info online here: https://tc.canada.ca/en/road-transportation/innovative-technologies/electric-vehicles/electric-vehicle-affordability-program

Objection Overruled: "EVs have a lot of fires."

- The Facts: EV fires are 20 times **less frequent** than gasoline car fires (.004% vs. .08%), according to the Swedish Civil Contingencies Agency)
- EVs are not explosive like gasoline and take longer to ignite, giving occupants more time to exit safely
- EPA Study: 25 for EV's vs 1530 for ICE / 100,000
- EV fires burn hot and long, and are hard to put out

Objection Overruled: "Cobalt used in EV batteries uses child labour in the Congo"

- Responsible Sourcing: Ethical EV companies use only responsibly-mined cobalt
- New Tech: Half of the EVs currently shipped in China use LFP (Lithium Iron Phosphate) batteries, which are entirely cobalt-free
- Universal Issue: Cobalt is also used in smartphones and other electronics; EV manufacturers are leading the charge in sourcing improvements

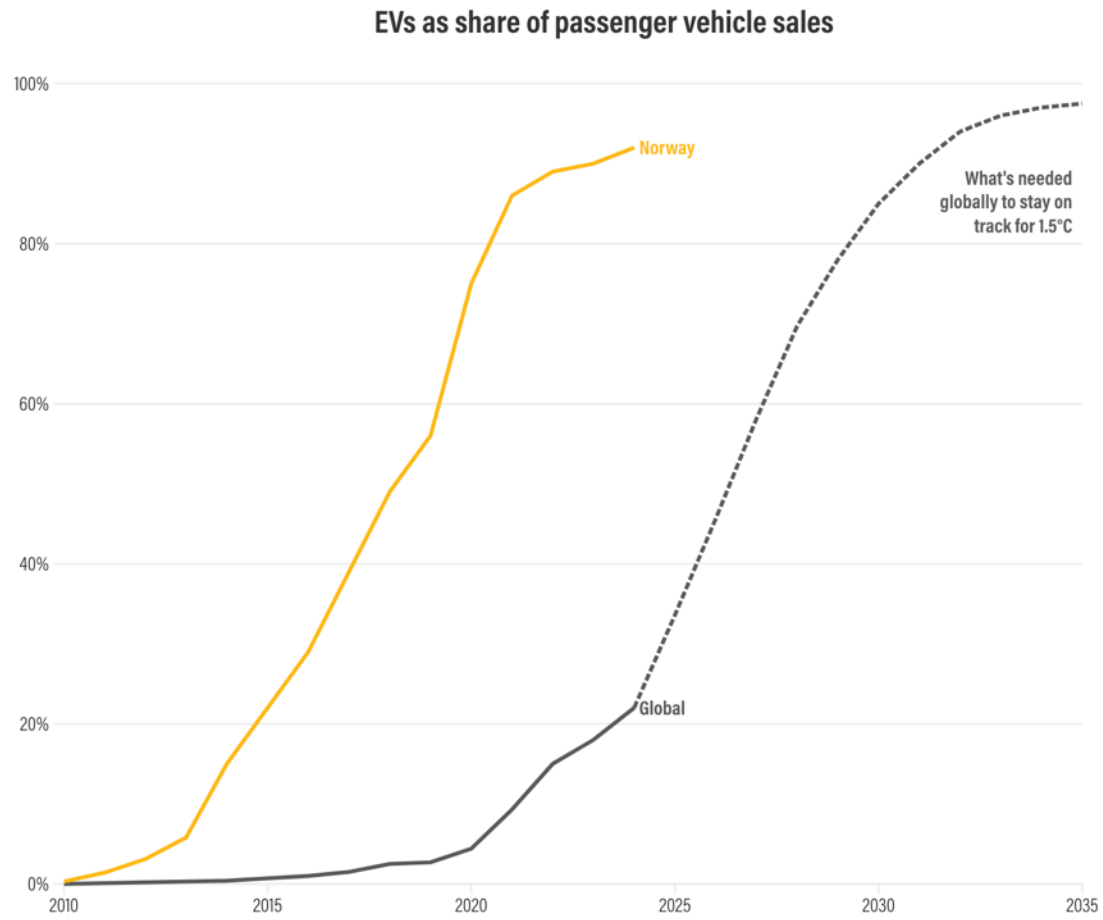


13

Objection Overruled: "Nobody is buying EVs anymore."

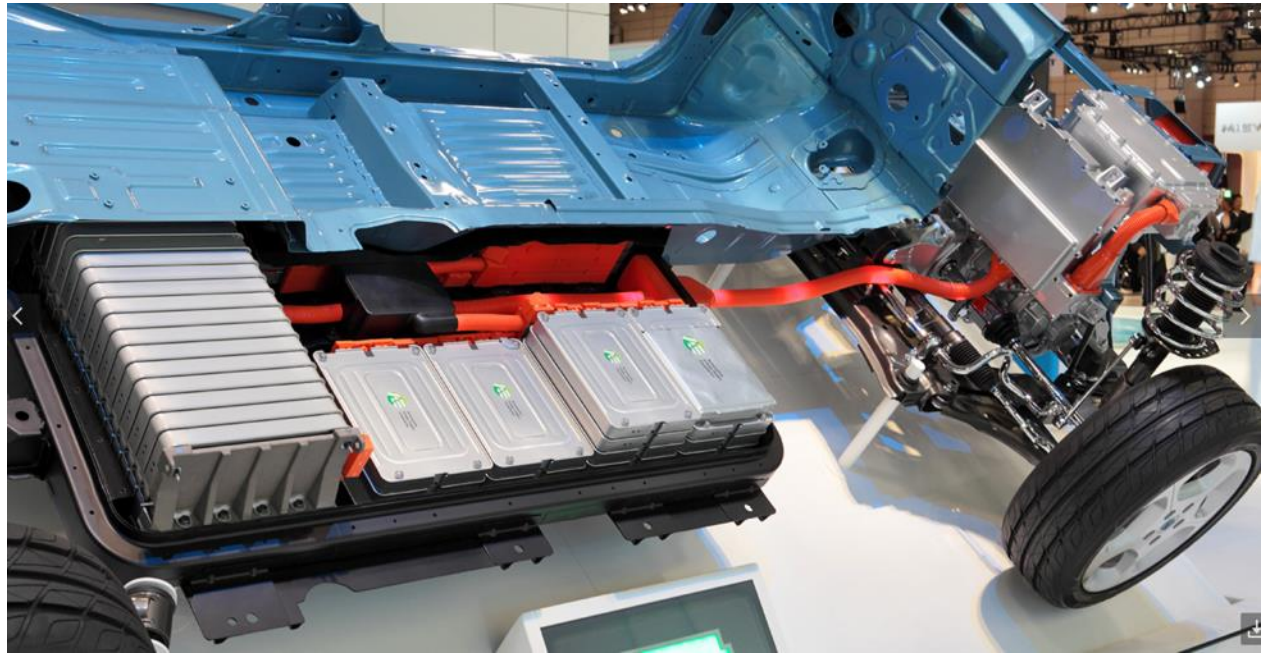
- Global Growth: Worldwide EV sales rose over 20% in 2025
- Market Share: About 25% of all vehicles sold globally now have a plug
- Global sales of internal combustion engine vehicles peaked in 2017 and have been declining since
- **Norway** is the world leader on EV adoption rates, growing sales from less than 1% to 90%+ in 14 years.

wri.org/insights/countries-adopting-electric-vehicles-fastest



Objection Overruled – “What do you do when the battery dies?”

- Many new EV’s have an 8-year, 160,000 km powertrain warranty
- Most battery replacements have been done via recalls, and early in the life of the car
- Batteries seem to outlive the car
- There can be some battery degradation over time which reduces range



Objection Overruled: “It takes too long to fill the tank.”

- Different cars and different charging stations can be faster or slower.
- More time is spent going to gas stations, waiting for oil changes, or doing maintenance for an ICE
- You always leave home with a full tank – takes no mere seconds to plug in!
- Different fueling algorithm – fill up enough to get to your next charge. Eg. When I stop in Mt. Forest or Orangeville for a charge, 10 minutes give enough to get home.

Objection Overruled: “The electricity grid can’t take the new EV demand.”

- Total increase in consumption is quite modest – about 10-15% if the entire fleet of light duty vehicles are EV.
- One study says that half the increase can come from reduced electricity consumption in oil refining and pipeline pumping stations – EV’s are efficient!
- Night time charging spreads the demand
- 10-15% increase in demand will occur over 15+ years – we have time to adjust

Objection Overruled: “EV’s aren’t good for rural drivers”

- Au contraire!
- Generally home charging is easier to install – more detached or single level homes
- Distances driven still tend to be in EV’s range
- The payback in fuel savings is quicker with higher mileage

- This may be true for some rural areas, but not Southern Ontario

Objection Overruled: ““EV’s cause higher emissions because it takes more energy to produce an EV than an ICE vehicle”

- True. It takes more energy to manufacture an EV than an ICE vehicle
- But the emissions from the fuel exceed emissions from EV so total emissions are way more (80%+ reduction)

Objection Overruled “EV’s don’t have the range for my needs.”

- Typical Range: 400–500 km is now standard for most models
- Some models up to 800 km
- The Human Factor: Most drivers need a break before the car does. Four hours of driving is the healthy limit for most people
- Range in winter as much as 30% less

Objection Overruled “EV’s don’t start in the winter. EV’s are bad with snow”

- Instant Starts: EVs start immediately in extreme cold because they don't have thick motor oil to overcome
- CAA queues are an ICE thing – cold viscous oil makes starting hard!
- Superior Traction: The heavy "skateboard" battery design spreads weight evenly, improving traction in the snow

- Snow performance depends mainly on tires, clearance, and AWD

Cold Weather Comfort: Features like heat pumps, heated seats, and heated steering wheels (standard on many models) maintain efficiency and comfort in winter

Objection Overruled: “What happens to EV Batteries at the end of life

- EV batteries are loaded with valuable critical minerals
- Already there are battery recycling companies that recycle lithium batteries of all kinds
- Cars are one of the most recycled products we have – there is already a business that recycles autos.

Objection Overruled: “My car dealer said an EV wouldn’t work for me.”

- Most car dealers are very poor at “selling EV’s”
- Car dealers will lose a lot of service revenue
- Some of the sales reps are poorly educated on EV’s
- Some companies have gone with a direct to customer sales model – Tesla, Rivian. And they are almost half of EV sales!

Selecting An EV

Drive locally – Owen Sound, Wiarton, Port Elgin

Any EV will work

Locally plus regular trip – eg. Guelph, Toronto etc.

Pick an EV with comfortable range

Road trips – Montreal, Ottawa etc.

Pick comfortable range

NACS is essential – can charge at most Tesla charging stations

Purchase Considerations

- What type of driver are you? (local, local and repeat trips, road tripper)
- Determines if NACS is important – at least with an adapter
- Range of the car
- Charging speed of car if you use high speed chargers a lot (>150 KW is good)
- Heat pump/heated seats/heated steering wheel helps winter range

Purchase Consideration for Used EV

- Do you need NACS? (Road tripper)

- Battery: Aim for 85%+ health; avoid less than 70%. Suggest charging to 100% to verify range.
- Warranty: Verify if the 8-year/160k km warranty is valid and transferable.
- Charging History: Prioritize vehicles primarily charged at home.
- Compatibility: Ensure compatibility with home and public setups (e.g., NACS connectors or adapters).
- Condition: Review tires, suspension, the 12V battery, and service records.

Take the leap …

Because it really isn’t that far!

EV Owner's Panel

Dr. Adam Matheson, F150 Lightning

Terri Munn, Chevy Bolt

Mike Campbell, Kia Niro