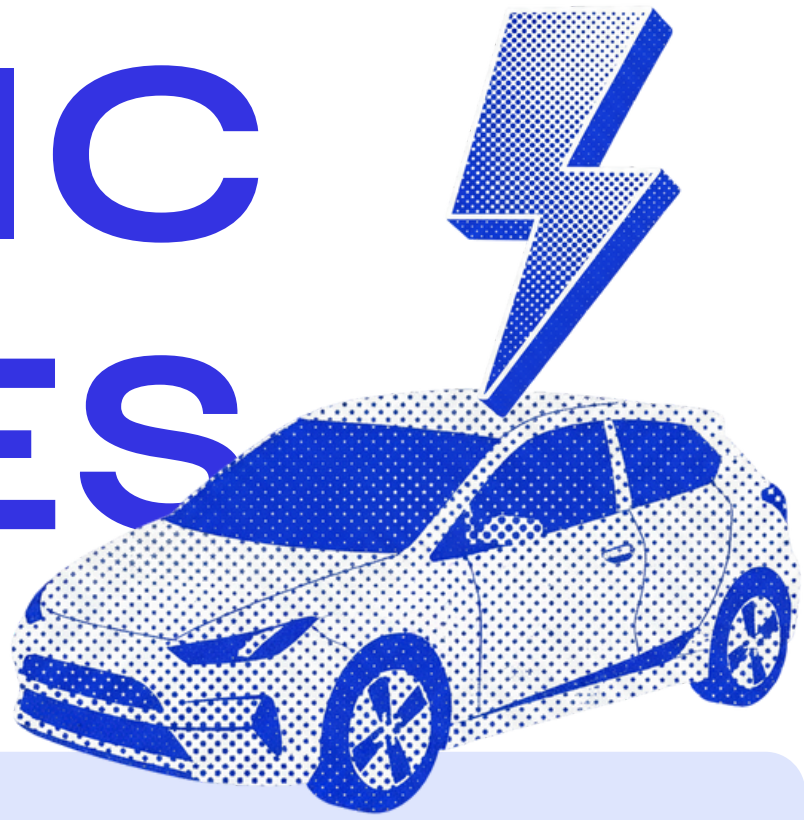
ELECTRIC VEHICLES

MYTHS VS. FACTS



Range & Reliabilty

❌ *“The range of most EVs is not sufficient.”*

✅ **Most EVs have ranges** from 200-500 km, **longer than most trips** and commutes.

The average car in New Zealand drives 11,000km a year, just over 200 km a week. Many new EVs have over 500 km of range, and many second-hand models have ranges over 200 km, handling the vast majority of trips. If range keeps improving as it has over the years, we may not even need to stop to charge on that 800 km trip, although we’ve never seen a human bladder last that long.

❌ *“EVs can’t do 4WD-ing.”*

✅ Most EVs available in NZ today can’t, but **new 4WD models are coming**.

EVs designed for 4WD-ing often have superior performance to fossil fuel 4WDs, but these expensive new models like the Ford F-150 Lightning, Mercedes-Benz G580, and Rivian R1 may not be widely available in NZ yet. Meanwhile, many AWD EVs available today will handle most ski field or dirt road exploits with ease.

❌ *“EVs can’t tow.”*

✅ It depends; **newer models designed for towing** are emerging.

Towing does reduce range, but by how much depends on the weight and whether the car has been designed to tow. One test by the Danish EV Drivers Association showed an Audi e-tron decreased its range by 1/3, while a Tesla Model 3 reduced its range by 1/2, when towing a caravan [1]. Most EVs in New Zealand today are not designed for towing significant amounts, though this is expected to change. Models overseas like the Chevy EV are already demonstrating that EVs can tow large loads over long distances.

❌ *"EVs aren’t reliable and don’t last as long.”*

✅ They’re **more reliable** than fossil fuel cars, and require **less maintenance**.

A study by the German Automobile Club found EVs averaged 3.8 breakdowns per 1,000 vehicles, while similarly aged combustion models more than doubled that rate [2]. Since EVs have no oil to replace and fewer moving parts, they have lower maintenance and repair costs [3].

Earlier EVs didn’t last as long as petrol and diesel vehicles, but due to advances in technology, they now have similar lifespans of around 18 years and higher lifetime mileage - and EV batteries are now often outlasting the cars they’re powering [4].

Safety & Technology

❌ *"EV batteries degrade quickly and are expensive to replace.”*

✅ **Modern EV batteries last** a long time.

Battery degradation is an issue with some earlier EVs and the replacement costs are high. But modern EV batteries are guaranteed for many years and show very small amounts of degradation. EECA says most new EVs have battery warranties that guarantee the battery for around 8-10 years and or distances of 160,000 km [4], which is similar to 15 years of average driving. Even after that, as with older second-hand EVs, their ranges are likely than capable of doing most everyday commutes, at significantly lower upfront and running costs.

❌ *"EVs pose a higher fire risk than non-EVs.”*

✅ The opposite: data from 2010-2022 suggests that **internal combustion engine (ICE) vehicles have an almost 100x higher chance of fire** than a passenger EV.

EV Firesafe, an Australian company funded by their Department of Defence that aims to reduce the risks for first responders, has recorded 772 battery fires globally among 40 million EVs since 2010. "Our initial research findings, based on global EV battery fires from 2010-2020, indicate a 0.0012% [rate] of a passenger electric vehicle battery catching fire. While it's difficult to find a similar stat for ICE passenger vehicles globally, a range of country-based reports we found suggest there is a 0.1% chance of an ICE vehicle catching fire." [5]

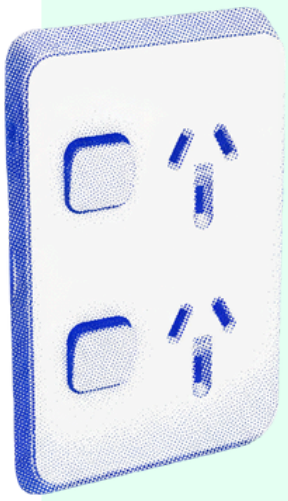
QUEENSTOWN ELECTRIFICATION ACCELERATOR

[1] https://cleantechnica.com/2021/01/18/caravan-trailer-on-the-tow-hitch-how-it-affects-ev-range/
[2] https://thedriven.io/2025/04/14/evs-more-reliable-than-ice-vehicles-with-the-best-and-worst-electric-cars-identified/
[3] Burnham, A., Gohlke, D., Rush, L., Stephens, T., Zhou, Y., Delucchi, M. A., ... & Boloor, M. (2021). Comprehensive total cost of ownership quantification for vehicles with different size classes and powertrains (No. ANL/ESD-21/4). Argonne National Lab.(ANL), Argonne, IL (United States).
[4] Nguyen-Tien, V., Zhang, C., Strobl, E., & Elliott, R. J. (2025). The closing longevity gap between battery electric vehicles and internal combustion vehicles in Great Britain. Nature Energy, 10(3), 354-364
[5] https://www.evfiresafe.com/ev-fire-faqs

Cost & Convenience

"It takes too long to charge an EV."

Fast chargers & modern EVs can **charge 100 km in under 5 minutes**. Overnight slow charging can get you around half a week of driving.



The average car in New Zealand drives just over 200 km a week. The range on new (and a lot of second-hand) EVs far exceeds this. You can charge your week's worth of range in four hours on a 7 kW home charger.

The majority of EV owners actually slow charge overnight with a standard plug (no wall charger needed), which also lets them make the most of time of use plans like free hours or off-peak rates.

A 300 kW charger could give a newer EV around 100 km of range in less than five minutes, shorter than a coffee stop. Public chargers are still important for longer trips and those without off street parking; more of these are being built by companies like ChargeNet, BP and Z.

"There aren't enough public chargers, and home charging needs expensive setups."

Most EV owners trickle charge with **any old three-point plug**.

Public charging is mostly for road trips, and most EVs have ranges of around 300 km to 500 km - high time for a coffee and a pie!

80% of EV owners do more than half their charging at home [6]. 60% of EV owners trickle charge with a standard plug, often overnight where you can make the most of cheaper overnight rates [7]. Many EVs can be programmed to start charging at certain times, or you can buy a cheap timer. Older homes may need to check the wiring and switchboard as prolonged charging for several hours can heat up and be a safety risk.

You can pay more for EV-specific charging ports if you want to charge more quickly, divert solar into the car. Bi-directional chargers are only for if you want your vehicle to run your home or feed back into the grid, once Vehicle-to-Home and Vehicle-to-Grid is enabled in the future.

"EVs are unaffordable."

Some EVs have higher upfront costs, but **prices are dropping** and the **lifetime cost is much less.** Add low-interest finance, and you can save money from day one.

If you're in the market for a car today, one of the main barriers might be the upfront cost, where most EVs are still more expensive than their internal combustion engine (ICE) counterparts. However, the upfront cost difference between EVs and ICEs is also coming down and projected to reach parity soon. There are also many secondhand EVs available at much lower prices. If you have access to low-interest long-term finance, the repayments (including interest) could be cheaper than the petrol bills you're paying right now [8].

When you add on the operating costs of owning a vehicle, EVs come out on top. With petrol and diesel cars, you're locking yourself into a multi-year fuel and emissions subscription that costs $100s-$1000s per year and is projected to keep increasing. For people who drive a lot, such as those living rurally or driving for work, this means the savings from going electric are even greater.

"EVs are only economical with solar panels."

Even powering an EV via **grid electricity** is **much cheaper than petrol or diesel**.

Including road user charges, charging your EV with your own solar is the equivalent of around $1.16/litre, but charging from the grid is still only $1.51/litre, much cheaper than petrol at around $2.77/litre [9]. This outweighs any upfront cost difference that the EV might have in comparison to petrol vehicles, over the lifetime of the vehicle, making it the more economical choice for the average NZ driver. Fast charging is much more expensive, but still cheaper than petrol in most cases.

Environmental impact

"EVs are not any better for the environment."

Compared to fossil fuel vehicles, **EVs are much better for the climate**, air pollution, and noise.

Fossil fuel vehicles emit so much that even counting manufacturing emissions, if you need to be driving, driving an EV in New Zealand with our highly renewable grid is much better for the environment [10].

When batteries degrade beyond automative requirements, they can get a second life as stationery energy storage. Counties Energy in Auckland converted 18 old Nissan Leaf batteries into an EV charger that reduces strain on the grid [11]. Redwood Materials, a battery recycling company in the US, combined 792 EV battery packs to produce 63 MWh for a data centre [12].

The materials in batteries are also highly recyclable. For EV lithium-ion batteries, recycling can already achieve >90% extraction of lithium, cobalt, nickel, and manganese [13]; reaching >99.6% for cobalt & nickel, and >95% for lithium [14].

By 2050, over half the demand for cobalt, graphite, and lithium could be met by recycled supply [15]. By moving away from machines that require single-use fossil fuels, we have the first real opportunity to create a circular economy [16].

"Road user charges (RUCs) make EVs expensive to run"

Even with RUCs, most EVs are cheaper to run than petrol cars.

Everyone should pay their fair share for road use. But for most cars, with average driving patterns, EVs will be cheaper even with RUCs included. With the upcoming 2026 changes where RUCs will also be applied to petrol cars, the economics stack up even better for EVs.

[6] https://www.consumer.org.nz/articles/new-zealand-electric-car-myths-debunked
[7] https://www.powerswitch.org.nz/the-best-power-plans-for-charging-your-ev
[8] https://www.rewiring.nz/watt-now/show-me-the-money-electric-economics
[9] This assumes road user charges of $76 per 1000 km, average petrol car efficiency of 8.72 L/100 km, 1:4 ratio of petrol:electric motor efficiency, petrol fuel density of 9.5 kWh/L, grid price of $0.27/kWh, financed solar price of $0.12/kWh, petrol price without excise of $1.90/L.
[10] https://www.rewiring.nz/watt-now/why-going-electric-wins-on-emissions
[11] https://countiesenergy.co.nz/media-centre/counties-energy-repurposes-end-of-life-ev-batteries-to-recharge-new-ev-cars/
[12] https://www.canarymedia.com/articles/energy-storage/redwood-used-batteries-data-center
[13] Zhang, J., & Azimi, G. (2022). Recycling of lithium, cobalt, nickel, and manganese from end-of-life lithium-ion battery of an electric vehicle using supercritical carbon dioxide. Resources, Conservation and Recycling, 187, 106628.
[14] Daan Walter, Will Atkinson, Sudeshna Mohanty, Kingsmill Bond, Chiara Gulli, Amory Lovins (2024). The Battery Mineral Loop: The path from extraction to circularity. Rocky Mountain Institute (RMI).
[15] Energy Transitions Commission (2023). Material and Resource Requirements for the Energy Transition.
[16] https://www.rewiring.nz/watt-now/closing-the-loop

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