Dealer’s Guide to Electric Vehicles

What you need to know when selling an electric vehicle
Electric vehicles’ profile and popularity are growing at an exponential rate.

Car buyers are increasingly likely to ask dealers what it’s like to drive and own these cars. This guide will help you answer their most common questions.

The Energy Efficiency and Conservation Authority (EECA) has provided it as part of the Government’s information campaign to accelerate the uptake of EVs in New Zealand.

Thanks to the Automobile Association (AA), Motor Trade Association (MTA), Motor Industry Association (MIA), Imported Motor Vehicle Industry Association (VIA) and other industry experts for their input.

Find out more about EVs at www.electricvehicles.govt.nz or email info@electricvehicles.govt.nz.
The changing face of transport

Road transport is changing at the fastest rate since the car took over from the horse and cart. Electric vehicles (EVs) are at the forefront of change around the world and in New Zealand.

Governments and consumers are looking for alternatives to fossil-fuelled transport. Globally, EVs are on track to dominate new car sales by 2040. Falling battery prices mean EVs will have lower lifetime costs and be cheaper to buy than internal combustion engine cars in most countries by 2025-29.1

Many European countries plus the UK and China have set targets to phase out the production and sale of petrol and diesel vehicles. Other countries plan to follow.

Automakers are responding by investing billions in research and development of this exciting new technology. The number of models on offer is expected to quickly increase.

The New Zealand vehicle market follows global trends, so EVs will play an increasingly important part in New Zealand’s new and used vehicle sales.

The number of New Zealanders open to EV ownership has grown fast. Market research by EECA shows a third of people would consider buying a battery EV.2 This will rise as battery technology improves, charging stations spread across the country, and EVs become more price competitive with petrol and diesel cars.

Car dealers need to understand EV technology, benefits and potential pitfalls to make the most of this rapidly evolving market.

The climate change connection

Under the 2016 Paris Agreement, New Zealand committed to reducing greenhouse gas emissions to 30% below 2005 levels by 2030.

Transport is responsible for about 18% of New Zealand’s total greenhouse gas emissions each year (45% of energy-related emissions), so one of the most effective ways to meet this target is by transitioning our fossil-fuelled transport fleet to run on clean, renewable electricity.

The Government is committed to accelerating the uptake of EVs in New Zealand.

The average New Zealand petrol/diesel car emits about 2.6 tonnes of greenhouse gas per year.

How many EVs are in New Zealand today?

See the latest statistics, including registrations by month and location, on the Ministry of Transport website: www.transport.govt.nz > Resources > Vehicle fleet statistics > Monthly electric and hybrid vehicle registrations.

1 Bloomberg New Energy Finance, Electric Vehicle Outlook 2017
2 EECA Consumer Monitor, April-June 2018
What is an EV?

An EV is a vehicle with an electric motor that is powered by an on-board battery charged from an external power supply. There are two main types.

**Battery electric vehicle (BEV)**

BEVs are powered only by electrical energy stored in the battery. They are also known as ‘pure electric’ vehicles.

A BEV is charged by plugging the vehicle into an external electricity source. This could be a regular electrical socket, a dedicated charging unit, or one of the many public charging stations around the country.

The battery recovers and stores energy generated when the car brakes, a system known as regenerative braking.

It has no tailpipe or tailpipe emissions.

BEVs particularly suit people who can charge overnight at home or at work, and who mostly travel within the battery range. BEV cars include BMW i3, Hyundai Ioniq and Kona, Kia Soul, Mitsubishi i-Miev, Nissan Leaf, Renault Zoe, Tesla Model S, and VW e-Golf. Vans include Renault Kangoo, LDV V80 and Nissan eNV200.

**What’s to love:**

- Low running costs. Using a residential off-peak electricity rate means you can charge your EV overnight for the equivalent of 30c a litre.\(^3\)

- Low maintenance costs. A BEV has a fraction of the moving parts in a typical petrol or diesel car. There is no oil to change and no oil filter, air filter, gearbox, drive belts or spark plugs to worry about. The regenerative braking system saves wear on the brakes.

- Very efficient around town. Regenerative braking recaptures and stores energy every time you slow down, and you use no energy when stopped in traffic.

- Lowest environmental impact.

**What you need to know:**

- BEVs are typically more expensive to purchase than their petrol/diesel equivalents, especially brand new.

- Charging can take 20 minutes or 8-10 hours depending on the battery and the charger you use. For long distance travel, drivers may need to plan where to stop and recharge (see page 14).

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\(^3\) Estimate based on a residential off-peak charge rate and will vary.
Plug-in hybrid electric vehicle (PHEV)

A PHEV has two types of motors – an electric motor and battery that can be charged from an external power supply, and an internal combustion engine fuelled by petrol or diesel.

Most PHEVs start and drive in EV-only mode until most of the power stored in the battery is used, then the petrol/diesel engine automatically takes over. Regenerative braking charges the battery in both modes.

During heavy acceleration, such as driving fast up a steep hill, the petrol/diesel engine and the electric motor work together to avoid excessive draw from the battery.

Some PHEVs generate electricity with a small petrol engine known as a range extender to power the electric motor once the battery charge decreases to a certain point.

The range of a PHEV in EV-only mode varies significantly. Some models can only do 15-20km while some newer models can do 60km or more.

PHEVs particularly suit people who can charge overnight at home or at work and often need to use the vehicle to travel beyond the battery range.

PHEVs include Audi A3 e-tron, BMW i3 (range extender model), Mitsubishi Outlander PHEV and Toyota PlugIn Prius.

What’s to love:

Compared to the equivalent petrol/diesel vehicle, a PHEV has:

- Lower running costs and lower environmental impact if most journeys are done in EV mode.

What you need to know:

- PHEVs are typically more expensive to purchase than their petrol/diesel equivalents.
- As PHEVs have a petrol/diesel engine, the maintenance costs are likely to be about the same as conventional vehicles. Like a BEV, regenerative braking saves wear on the brakes.
- Many PHEVs can’t be fast charged.
- Using the petrol/diesel engine generates emissions.

What about hybrids?

Hybrids that don’t plug into an external electricity supply to recharge are not EVs.

The battery is charged by a petrol/diesel combustion engine and regenerative braking. They are more efficient than a conventional petrol/diesel vehicle and generate fewer emissions.

Hybrids include Toyota Prius and Prius C, Honda Insight and Civic IMA, and Lexus hybrid range.
Why people buy EVs

Market research clearly shows the two key reasons New Zealanders start looking for an EV.

1. **EVs are cheap to run**

Battery electric vehicles are significantly cheaper to run than petrol/diesel cars. Because the motors are so simple, maintenance costs are also low.

PHEVs have lower running costs when driven in EV mode. As they have a petrol/diesel engine, maintenance costs are likely to be about the same as conventional vehicles.

2. **EVs are environmentally friendly**

EVs emit 80% less CO₂ than an equivalent petrol vehicle when being driven, due to the fact that electricity generated in New Zealand is typically at least 80% renewable (the main sources being hydro, geothermal and wind).

This was a key finding of a report into the lifecycle environmental impacts of a battery EV, commissioned by EECA.⁵

Overall, it found that EVs are better for the environment than petrol or diesel vehicles, even taking into account their manufacture.

It found that an EV:

- emits 60% fewer CO₂ emissions over its full lifecycle (which includes extraction of materials and manufacturing).
- uses 40% less energy (cumulative energy demand).
- produces far fewer particulate matter emissions over its full lifecycle, including exhaust emissions and raw material refining.
- produces 50% less photochemical matter (photochemical oxidation) which contributes to the formation of smog.

EVs don’t contribute to air quality issues in New Zealand cities.

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⁴ Estimate based on a residential off-peak charge rate and will vary.

Why EV owners love their cars

The instant torque and silent acceleration was addictive.

There is no complicated technology; you just plug it in at home, get in and drive.

We are literally saving $400-500 a month on fuel alone.

Buying an EV was the way I could personally make the most difference to my carbon footprint.

Silent ride, lower stress driving, full tank in the morning.

It was a no-brainer after that one test drive.

We are really appreciating the quiet and comfortable drive.

I love never stopping at a petrol station.

Comments made in a survey of 391 EV owners carried out by citizen science project Flip the Fleet. See www.flipthefleet.org
Advertising that works

To attract a prospective EV buyer, your ads need to provide several key pieces of information (including online ads):

1/ Battery size in kilowatt hours (kWh). This indicates how much electricity the battery can store and therefore how far the EV can drive on a charge. This can vary between models.

2/ Battery condition. This can be described in a number of ways including percentage of battery capacity remaining, State of Health reading and, for a Nissan Leaf, how many bars the car will charge to out of 12.

3/ Any warranty covering the EV battery.

4/ The type(s) of charging equipment supplied - see more about your responsibilities on page 12.


6/ Vehicle fuel economy rating, so customers can compare EV running costs with a petrol or diesel vehicle. You can get labels for most EVs by using your dealer login at www.eeca.govt.nz > Standards, ratings and labels > Vehicle fuel economy labels.

You can quote these facts, researched and verified by EECA or the Ministry of Transport:

- 90% of travel by car in NZ is less than 90km.
- New Zealanders’ average daily car travel is around 30km.
- Equivalent to paying $0.30 per litre.

EECA provides brochures, other printable material and designs for flags as part of the Government’s information campaign to accelerate the uptake of EVs. Email info@electricvehicles.govt.nz for a list of promotional artwork or to request brochures.
Is an EV right for your customer?

These key considerations will help prospective buyers work out if a BEV or PHEV will best suit their needs and lifestyle.

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<th>Do you...</th>
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😊 Ideal  😟 It depends – find out more in this guide or talk to an EV expert.

Understanding range

It’s getting easier all the time to drive long distances in an EV, thanks to rapid improvements in technology and public charging infrastructure. But customers need to understand:

- the range of the car they’re considering
- how to use public charging stations – see page 14.

Remember:

- It’s easy and cheap to charge at home at night.
- Our network of charging stations is growing all the time and has government support.
- You can find chargers and plan long-distance routes online - see the New Zealand Transport Agency website [www.nzta.govt.nz/evroam](http://www.nzta.govt.nz/evroam) or visit PlugShare, ChargeNet and Vector websites.
EV batteries

EV batteries are sophisticated pieces of equipment designed to last many years. Most new EVs have battery warranties that guarantee the battery for a certain length of time (typically 5-8 years, sometimes longer) or distance (such as 100,000km).

Over time, EV battery capacity gradually decreases the more it is used, like a mobile phone. It can also happen when a vehicle is parked up and not being used.

Uncertainty about battery life is a common barrier for people thinking about EVs, according to market research.

Judging battery health

A battery “State of Health” (SoH) report is a useful way to judge how much life a used EV battery has left. Data is extracted with vehicle-specific software. The report describes the overall condition of a battery – not its current charge – showing how much longer you can expect it to last, based on how it has been used to date.

It can be a more useful measure for buyers than an odometer reading. For example, an EV may have very low mileage but a reduced SoH if it has been in storage for some time. An EV with slightly higher mileage but better SoH may be a better option.

Replacement and disposal

When an EV battery no longer provides a useful driving range – typically after many years – it can be refurbished or replaced. Sometimes it’s possible to just replace the dead cells within a battery at a lower cost than full replacement.

This work should only be carried out by a qualified service provider, such as an approved service agent for the vehicle.

Although new batteries are expensive (typically costing several thousand dollars) EVs remain cost effective even when replacement is taken into account. Research based on the popular Nissan Leaf shows even if owners need to replace the battery, an EV can compete with a petrol car in terms of overall cost.6

The used battery still has value. It can be refurbished, repurposed or recycled - for example, to store electricity from solar PV panels, or raw materials reclaimed. Customers may even be paid for the old battery.

Members of the Motor Industry Association of New Zealand (MIA) have committed to a code of practice to have suitable systems in place for the use, capture, return, refurbishment, reuse, recycling or disposal of EV and hybrid batteries, with the aim that no batteries end up in landfills.

The 12V battery

As well as the main battery, most EVs have a 12 volt (V) battery that stores power to run the management computer and accessories like lights and stereo. It's a traditional lead-acid battery that doesn’t need to be plugged in to charge - but if it runs flat the car won’t go, even if there’s charge in the EV battery.

Keep an eye on the 12V battery of EVs at your dealership as they could go flat if accessories are frequently tested without the vehicle being driven.

* Energy Efficiency and Conservation Authority. Electric Vehicle Battery Life 2017
**Getting the best from a battery**

As with any car, the driver of an EV has the biggest influence on its performance over time. The owner will get more out of their battery if they:

- Drive smoothly, avoiding harsh acceleration and/or braking. This minimises stress on the battery and gives the best daily range.

- Minimise frequent fast charging. (This may differ depending on the EV model and the climate it is operating in – the EV manual or manufacturer should provide more details.)

- Only recharge the battery when needed. Many EV owners find they only need to charge every few days. Use the EV’s software or timers to get the best off-peak electricity rates.

- Limit battery exposure to extreme heat or cold. In very hot weather, it’s better to park and charge in the shade or in a garage. In very cold weather (below freezing), owners should follow battery care instructions in the manual. Some batteries have thermal management systems that use a small amount of energy to protect the battery by regulating its temperature.

- When storing an EV for a long time, follow the battery care instructions in the manual. Don’t store it with a fully charged battery.

- Follow the manufacturer’s servicing recommendations. EVs should always be serviced by a qualified technician.

**Find out more**

Owner’s manuals have more detailed and specific battery care advice. They should explain warranty conditions to ensure customers get the full protection of their manufacturer’s warranty, as well as maximum useful battery life.
Charging equipment

EV charging equipment includes charging cables, supply leads, wall-mounted charging units and public charging stations. Any of these items may be described as EVSE (electric vehicle supply equipment).

Charging cables and supply leads

Cables for charging at home have a connector to suit the car’s inlet on one end, safety device in the middle or built into the outlet, and a New Zealand 3-pin plug on the other end.

They can be called in-cable control and protection devices (IC-CPD).

Supply leads are cables used to charge at public slow (AC) charging stations. They have a connector to suit the car’s inlet on one end and a connector to suit the charging station outlet on the other.

You don’t need your own cable to connect to a public fast (DC) charging station.

Inlets

There are several types of inlet. Vehicles may only have an AC inlet (many PHEVs, Renault Zoe), separate inlets for AC and DC charging (Nissan Leaf) or a CCS Type 2 inlet that combines AC and DC inlets (VW eGolf, Hyundai Ioniq).

You can only plug into public fast chargers if the EV has either a ChAdeMo or CCS Type 2 (combined) inlet.

Charging connectors

See the different charging connectors that relate to New Zealand's electric vehicle fleet, including the New Zealand Transport Agency’s recommended connector types for public charging infrastructure, at www.nzta.govt.nz. Search “Charging point connectors and socket outlets.”

Safety - your responsibilities

- When selling an EV, including a used import, you must only supply charging equipment designed for use in New Zealand. If the vehicle comes with equipment that doesn’t display a voltage range that includes 230 V, doesn’t have a New Zealand plug, or has been modified (even to fit a New Zealand plug), it should not be used as it isn’t suitable for New Zealand’s electricity supply. Even if it appears to work, you can’t be sure the safety device will work when it needs to. Supplying such equipment is an offence.

- You must be able to provide a signed copy of a Supplier Declaration of Conformity to show the charging equipment you supply has been tested and meets electrical safety standards.

- Some charging cables come with an industrial or caravan plug for faster charging. If you supply one, advise the EV owner to have an electrician install a special power point. It is unsafe to charge with adaptors as power points can be overloaded.
Charging an EV

Charging at home

Charging at home overnight is the simplest, cheapest and most convenient way to charge. EV owners may be able to take advantage of off-peak electricity rates. Some power companies offer special rates for EVs.

Portable 3-pin charging cable

This plugs into a standard household power point and is typically supplied with the EV. It can be called an in-cable control and protection device (IC-CPD).

Check: Used vehicles from other countries may be supplied with a charging cable. Replace it with a charging cable that is suitable for New Zealand’s power supply. Some cables come with an industrial or caravan plug that allows faster charging. These require an electrician to install a special wall power point.

Safety: Do not use extension cables or adaptors.

Tip: To maximise the EV’s battery life, avoid charging to full every day unless needed. See other tips on page 11.

Wall-mounted charging unit

A wall-mounted AC charging unit at home or work provides more safety and faster charging. Some devices have timers to make off-peak charging easy. They may display information and allow you to control charging with a smartphone. A smart charging unit with wifi connectivity offers the most futureproof option for customers.

The units need to be installed by a registered electrician who should:

- install a separate sub-circuit.
- make sure the cable to the socket is capable of supplying the power the unit can deliver. A circuit capable of supplying 32 Amps will futureproof the installation.
- install a Type B RCD.
- be able to confirm the charging equipment has a Supplier Declaration of Conformity to show the unit has been tested and meets electrical safety law.

You can charge inside or outside, and in any weather conditions. But all EV charging equipment should be designed for use in New Zealand, and for the conditions in which it will be used.
Charging out and about

EV owners may sometimes want to top up when they are out, or on a longer trip.

An ever-increasing number of public charging stations are popping up on New Zealand highways and places like shopping malls, airports, supermarkets and even petrol stations.

Websites and apps show the locations of public chargers, whether they’re slow (AC) or fast (DC) and what type of connectors or sockets are provided or required. It’s easy to plan a long-distance route online – see the New Zealand Transport Agency (www.nzta.govt.nz) or visit PlugShare, ChargeNet or Vector websites.

Public fast charging

Fast chargers typically cost about $10 per 100km. They can add 100km of range to the battery in 20-30 minutes.

Companies installing fast charging stations include local electricity networks, ChargeNet and Chargemaster. Customers generally need to create an online account to gain access to a fast charging network.

Tips:
- All fast charge stations have tethered CHAdeMO and/or CCS Type 2 cables so customers don’t need to bring their own.
- Signing up to a fast charging network makes billing and payment easier.
- It’s better for batteries to fast charge occasionally rather than frequently.
- The last 20% of a battery takes longer to charge. This is why fast chargers have an option to charge only to 80%.

Check: Most pure BEVs can fast charge, but many PHEVs cannot.

Public slow charging

These are often found at locations where drivers stop longer (such as shops, hotels, tourist attractions).

Charging is usually free and can take several hours.

Tip: You usually need to bring your own supply lead to use this type of charger.
To charge an EV safely:

- Never use extension cables.
- Never take a cable across a footpath to charge.
- Do not use devices to connect the charging cable to the power supply (such as multi-boxes, double plugs or travel plugs).
- You can use an adaptor to connect the charging cable to the car, provided it is confirmed for use by the manufacturers of the vehicle and the cable.
- Never use modified charging equipment such as overseas equipment that has been fitted with a New Zealand plug.
- Never use damaged or faulty charging equipment. Have it checked by the manufacturer.

Find out more on www.worksafe.govt.nz > Managing health and safety > Consumers > Safe living with electricity > Safely charging your electric vehicle at home

Go the extra mile

- Research shows that customers who test drive an EV are far more likely to buy one. Encourage customers to drive an EV home and practice plugging it in.
- Gift EV buyers a charging cable manufactured for use in New Zealand, or a Type 2 supply cable so they can use public slow (AC) charging stations. Make sure it has a signed copy of a Supplier Declaration of Conformity.
- Partner with a qualified electrician and charging unit supplier, so you can refer customers interested in installing a wall-mounted charging unit (see page 13).
What’s the resale value of an EV?
The market is still relatively new so resale values are only starting to become established. It will also take time to determine how EVs, with their lower running costs, will affect the resale value of petrol and diesel vehicles in the longer term.

How safe are EVs?
EVs sold in New Zealand must meet the same minimum vehicle safety standards as petrol and diesel vehicles. The vehicle safety rating shows how safe the vehicle is – see www.rightcar.govt.nz. The maximum 5-star ANCAP rating is recommended. An EV’s high-voltage electric system is designed to automatically deactivate in a crash. They are far less likely to catch fire in a crash than petrol or diesel vehicles. In addition, the weight of the battery packs give EVs a lower centre of gravity, so they are less likely to roll.

What servicing does an EV need?
The AA recommends EVs are serviced as often as petrol/diesel vehicles - every 12 months or 15,000km (whichever comes first), or according to the manufacturer’s recommendation. PHEVs need the same regular servicing as a petrol/diesel car. BEVs don’t have a petrol/diesel engine but items such as brakes, tyres, lights and wipers still need taking care of. The Motor Trade Association (MTA) and AA can help dealers find technicians to service the EV component of a PHEV or BEV.

Who does battery replacements?
A servicing industry is starting to emerge and will grow as the New Zealand EV market matures and batteries begin to age. This will support owners with battery replacement, refurbishment and repair. Battery replacement should only be carried out by a qualified service provider, such as an approved service agent for the vehicle.

What if the information systems are in another language?
EV specialists can convert the dash cluster/instrument panel of imported vehicles into English.

What if there’s a software glitch?
Electronics or software problems can usually be fixed with a software update, like smartphones.

Can EVs cope with hills?
Yes - EVs are great hill climbers. The high torque and lack of gears mean they usually climb better and more smoothly than a petrol or diesel vehicle, and regenerative braking means they recharge going downhill.

Are EVs affected by climate?
New Zealand’s temperate climate is well suited to EVs. Battery life can be reduced by extreme temperatures – below freezing and above 30 degrees Celsius. In these conditions, look for advice in the car manual. Cold weather will reduce an EV’s range, particularly if heaters and demisters are used.

What tyres should I fit?
Fuel efficient tyres will maximise efficiency and range.

Can an EV be towed?
Check the vehicle manual. Many EVs should only be transported on the back of a truck.

Can an EV tow a trailer?
Many manufacturers state their EVs should not be used for towing. Check the vehicle manual or ask the manufacturer.
Can pedestrians hear an EV?
EVs can be very quiet until they reach about 25km per hour, when the tyre noise can be heard from outside the car. Some EVs emit audible sounds at low speeds to alert pedestrians and cyclists.

What perks are there for EV owners?
In some places, EVs can get priority parking, and free charging (look for signage).

What groups can EV owners join?
Owners can become part of a supportive community – they can join local and national Facebook EV owners groups, the citizen science project Flip the Fleet, or low-carbon champions Better NZ Trust.

Does New Zealand have enough electricity to charge a national fleet of EVs?
If all light vehicles in New Zealand were electric (which is a long way off), this would increase our current total electricity demand by around 20%, EECA estimates. This could be accommodated within New Zealand’s current electricity generation output, even allowing for the uncertainties of renewable generation, provided the majority of EVs are charged during off-peak periods.

Many electricity network companies are working with councils and other third parties to build more charging infrastructure to meet predicted demand.
**EV jargon**

**AC:** alternating current. Most charging at home and at public slow charging stations is AC. EVs have an in-built battery charger that converts AC electricity to DC to store in the battery.

**Amp:** a measure of electric current used to denote the capacity of an electric supply to an EV charging point.

**BEV:** battery electric vehicle - an electric vehicle that uses only electricity as its motive power.

**BMS:** battery management system - electronic system which ensures an EV battery operates/charges within safe limits.

**CHAdeMo:** a type of connector capable of DC fast charging an EV, used in vehicles like the Nissan Leaf and the Kia Soul EV. It stems from the Japanese phrase “time for a cup of tea.”

**CCS Type 2:** a type of connector capable of DC fast charging an EV; mainly a European plug standard that is used by EVs like the Hyundai Ioniq and VW e-Golf.

**DC:** direct current - most fast charging stations are DC stations. Electricity is stored in an EV battery as DC.

**EVSE:** electric vehicle supply equipment - the charging cables and other equipment used to charge an EV.

**IC-CPD:** in-cable control and protection device - a portable charging cable.

**kW:** kilowatt - a measure of power used to denote the power (size) of an EV’s electric motor and the power (speed) of a charging station.

**kWh:** kilowatt hour - a measure of stored energy - used to denote EV battery capacity (size) or the basis for the cost of electricity, e.g. cents per kWh.

**LiON or Li-ion:** Lithium-ion – the most common type of battery chemistry used in EVs.

**PEV:** plug-in vehicle - alternative name for electric vehicles.

**PHEV:** plug-in hybrid electric vehicle - an electric vehicle that has both an electric motor and battery, and an internal combustion engine fuelled by petrol or diesel.

**Range extender:** a small petrol engine in the vehicle that runs a generator to charge the battery.

**SDoC:** Supplier Declaration of Conformity - certificate supplied by charging equipment providers to declare that they meet the requirements of the Electricity (Safety) Regulations 2010.

**SoH:** State of Health - a measure of the overall condition of a battery - the higher the SoH the better.
Find out more

**Government**

**EV website – Drive the Future**
New Zealand government website with videos, advice, news and links to events, dealers and more.
www.electricvehicles.govt.nz

**Energy Efficiency and Conservation Authority (EECA)**
EV advice and information.
www.energywise.govt.nz/on-the-road/electric-vehicles

Buyer’s Guide to Electric Vehicles

Total Cost of Ownership Tool for fleet buyers comparing new EVs, petrol and diesel vehicles.

**Ministry of Transport**
Government’s EV programme.
www.transport.govt.nz/multi-modal/climatechange/electric-vehicles

Statistics on EVs registered in New Zealand.

Fact sheet on the suitability of EVs for New Zealand.

**New Zealand Transport Agency (NZTA)**
Planning for electric vehicles, including the national vision and guidance for public charging infrastructure.
www.nzta.govt.nz/ev

Information on EVRoam, a live database of New Zealand’s EV charging infrastructure.
www.nzta.govt.nz/evroam

Charging stations map.
www.journeys.nzta.govt.nz/ev-chargers

**WorkSafe**
Guidelines for safe EV charging.
worksafe.govt.nz/laws-and-regulations/regulations/electrical-regulations/regulatory-guidance-notes/electric-vehicle-charging-safety-guidelines

Guidelines on supplying safe electrical and gas products.
worksafe.govt.nz/topic-and-industry/energy-safety/compliance-guides

Electricity (Safety) Regulations 2010.

**Advocacy groups**

**Leading the Charge**
EV enthusiast group with frequently asked questions about EVs, events calendar, information guide, car models and dealer list.
www.leadingthecharge.org.nz

**Drive Electric**
Not-for-profit EV advocacy group.
www.driveelectric.org.nz

**Flip the Fleet**
Community science project collecting and sharing data on EV users.
www.flipthefleet.org

**Apps for EV charging station locations**
www.plugshare.com
www.charge.net.nz/appblog
www.vector.co.nz/personal/ev-charging
Will your next sale be an EV?
www.electricvehicles.govt.nz