CAMPBELLTOWN

YOUR NEED TO KNOW GUIDE TO ELECTRIC VEHICLES

What is an EV?

An electric vehicle (EV) runs purely on electricity instead of traditional petrol or diesel fuel.

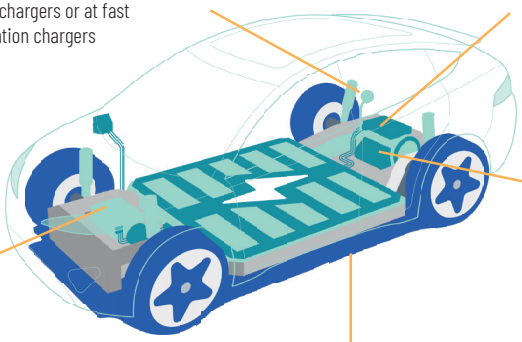
EVs use one or more electric motors powered by rechargeable batteries to propel the vehicle. EVs are highly energy-efficient and environmentally friendly, unlike conventional internal combustion engine (ICE) vehicles, EVs produce zero tailpipe emissions. Recharging an EV typically involves plugging it into an electrical outlet or dedicated charging station to replenish the battery's energy.

Did you know a EV motor contains only around 20 moving parts where as a conventional ICE engine can have over 2000!

How does an electric vehicle work?

Charge Port
Charge at home with a standard household power point, at the office or shopping centre at public chargers or at fast charging destination chargers

On-board Charger
All EV's require an on-board charger to accept the power delivered from charging to the battery pack. On-board chargers are rated in kW and determines how fast your EV can charge.



DC/DC Converter
Converts high voltage power from battery pack to low voltage used to run accessories like the radio, lights and wipers

Electric Motor
A completely sealed magnetic electric motor, requires almost no maintenance due to very minimal moving parts and low heat generation. The power output is measured in kilowatts (kW)

Battery Pack
The 'fuel' tank of the vehicle, most commonly made of Lithium Ion batteries. The packsize determines the vehicles range, and is measured in kilowatt hours (kWh)

Benefits of EVs

Reduced running cost
Low maintenance costs, significant fuel savings when compared in combustion engine vehicles

Reduced emissions
Zero tailpipe emissions and lower overall lifecycle emissions

Improved local air quality
Significant reduction in harmful air pollutants such as carbon monoxide and nitrogen oxide produced from combustion engines

Improved local amenity
Quieter roads due to reduced engine noise makes for more liveable city centres and suburbs

Demonstrating leadership
By adopting new zero emission technology we are demonstrating to our community that we are embracing a cleaner future

Increased resilience
Reducing our reliance on imported fuels means our transport will be less vulnerable to global shock events

Can I charge at home?

Yes! Absolutely, it is the easiest and cheapest way to charge an EV

- Charging your EV should just be like charging your mobile phone, although you probably won't even need to do it every day.
- There are two main ways to charge at home- using designated installed EV charging equipment, or simply plugging in to a regular household power socket.

*Important to keep in mind - best to use a wall socket that does not have any other load associated with it as this could blow a fuse if overloaded.

*It is best not to use an extension cord for charging your EV, however if one is required it is highly recommended using a good condition cord with a thickness of no less than 1.5mm (thickness is written on the cord itself).

How does an Electric Vehicle Charge?

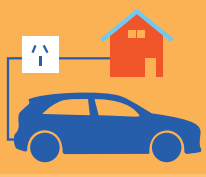
To calculate the approximate charging time for your EV, you can use a simple formula: **battery size (kWh) / charger power (kW) = charging time (hours).** For example, a 50kWh battery using a 100 kW charger will take half an hour to charge to full. Alternatively, how to work out charging time for distance, you can use the formula: **Charger power (kW) = distance (km) from 10 minutes charging** For example: 100kW charger = 100km in 10 minutes.

Types of chargers

Level 1

AC **1 -2kW**

Full charge
5-16 hours
10-20 km/hour

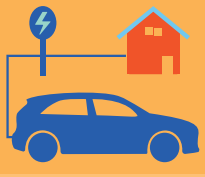


Where to charge
Home

Level 2

AC **7 -22kW**

Full charge
2-5 hours
30-80 km/hour

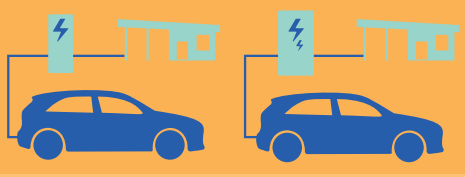


Where to charge
Home
Work
Shopping Centres
Car parks

Level 3

DC **50kW to 250kW**

Full charge
20 minutes to 1 hour
250- 1000 km/hour



Where to charge
Highways
Motorways
Key destinations
Large carparks
Petrol stations

How do I charge in public?

- Use Google Maps or the PlugShare phone apps to locate a charger near you
- Most new EVs will also have charging locations in-built within their navigation system
- Did you know there are already over 700 public charging locations across NSW, and there are plans to roll out more public chargers to provide a charger every 100km across all major NSW highways and every 5km in metro areas.

There are so many places to charge out in public these days with more and more becoming available every day, you just need to know where to find them.

EV MYTH BUSTING

- **EVS CAN'T TRAVEL LONG DISTANCES**
  Modern EVs can most definitely travel long distances, with top of the range vehicles able to travel up to 800kms on one charge, with many mid-range vehicles easily able to travel over 300kms per charge.

- **EVS ARE MORE EXPENSIVE THAN ICE VEHICLES**
  Upfront costs may still be higher than some ICE vehicles however once the total cost of ownership is factored in including maintenance and fuel costs, EVs will ultimately cost less overall.

- **EVS ARE HAVE LESS POWER THAN ICE VEHICLES**
  An EVs electric motor has instant torque and quicker, more responsive acceleration at any speed meaning they are never short on power.

- **THERE ARE NOT ENOUGH PLACES TO CHARGE EVS**
  Realistically, anywhere that has a power outlet can charge an EV, public charging infrastructure is now increasing at a rapid rate with chargers available at shopping centres, commuter carparks, petrol stations, roadside stops, tourist destinations and numerous kerbside locations.

- **EVS ARE ACTUALLY WORSE FOR THE ENVIRONMENT**
  Although producing the batteries that go into EVs does have an environmental impact, the total lifecycle of vehicle emissions from EV production, use and disposal is still less that ICE vehicles.

- **THEY ARE PRONE TO CATCH FIRE**
  EVs are actually far less likely to catch fire than petrol or hybrid vehicles. A US study found that per 100,000 EVs sold 25 experienced a fire, compared to 1530 for petrol and 3474 for hybrid vehicles respectively.

- **WHAT WILL WE DO WITH ALL THE BATTERIES**
  Once EV batteries reach the end of service as a vehicle battery (approximately 10 years), they have the ability to be reused as energy storage units for renewable energy, whilst these batteries also are highly recyclable with more than 90% of battery materials able to be recovered.

- **CHARGING THEM PRODUCES THE SAME AMOUNT OF CO2 AS PETROL CARS**
  Charging your EV from grid power is still going to have an emissions impact due to electricity being produced by burning fossil fuels, however, even charging using the dirtiest electricity produces almost half the CO2 per km then using petrol, plus our electricity grid is adding more renewables all the time making EVs even cleaner.

- **THEY CAN'T TOW**
  They absolutely can! Towing vehicles need torque and EVs have a lot of torque. Yes, vehicle range will be reduced depending on how heavy the towing load is but as far as ability, EVs are well equip for the task.

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