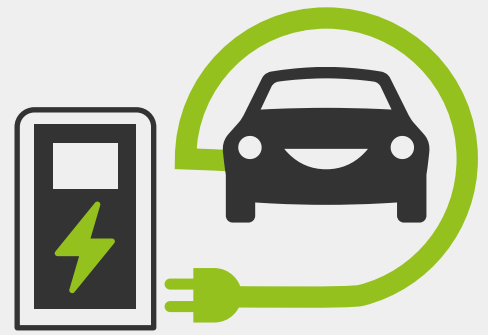
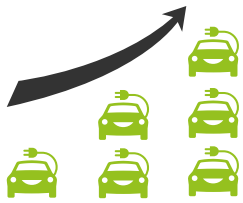


ELECTRIC VEHICLE CHARGING

WHAT YOU NEED TO KNOW



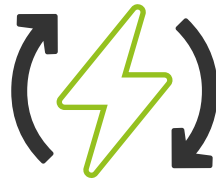
QUICK FACTS



By **2040** it is expected that **61%** of all passenger vehicle sales in Australia will be electric.



Electric vehicles (EVs) **create less air and noise pollution**, and can be run completely carbon neutral when powered by renewable energy.



The EV industry is further developing the 'Vehicle to Grid (V2G)' technology that allows EVs to feed power back into the grid at times of high demand. Some models are already capable of **feeding electricity**.



The average motorist drives only 37 kilometres per day. Electric vehicles can easily accommodate this daily range with some models offering a range of 400km + on a single charge.



Data has shown that **85% of all EV charging is done at home**, and rarely from 0 – 100%. Also charging times are falling quickly as technology advances.



WHAT IS AN EV CHARGER?

An EV charger or EVSE (Electric Vehicle Supply Equipment) is any smart device that dispenses electric charge to the vehicle.

It may be wall-mounted or free-standing, and includes one or more cords with special connectors that plug into the vehicle.

WHAT IS THE DIFFERENCE BETWEEN AC AND DC CHARGING?

The electricity grid delivers **AC (alternating current)** but EVs charge their batteries with **DC (direct current)**. An electric vehicle has an on-board charger to convert AC power to DC.

DC chargers deliver power directly to the battery of EVs at a much higher rate, but have a more complex design and cost more. Most home and destination chargers are AC.

For further information – including some good images – on how power is delivered to EVs please click [here](#).

HOW FAST CAN I CHARGE MY CAR?



Levels of charging based on speed.

Level	Format	Description	Charging Power	Charging Speed (additional range per hour)
Level 1 <ul style="list-style-type: none"> Simplest, cheapest, slowest technology Can be used to top up daily use Requires a specialised cable usually supplied with the vehicle but no specialised installation equipment. 	Single Phase	Produces a “trickle” charge through a standard power point	2.4kW	Will not fully charge an EV overnight
Level 2 – destination chargers <ul style="list-style-type: none"> Most common home and public charging level Connected directly to the electrical network via specific socket and plug and a dedicated circuit Can fully charge your EV overnight, usually within five to eight hours. 	Single Phase	AC power supplied using dedicated EVSE	3.6kW – 9.6kW	Up to 40 km/hour
	Three Phase	AC power supplied using dedicated EVSE	3.6kW – 22kW	Up to 120 km/hour
Level 3 <ul style="list-style-type: none"> Fast charging units typically found in commercial premises or en-route highway locations similar to fuel stations Requires significant panel and service upgrades and consequently is the most expensive to deploy. 	DC	DC fast charging power dedicated EVSE and electrical infrastructure	25kW – 350kW	Typically 70km/10min or 420km/h

WHERE COULD I FIND A PUBLIC CHARGER?



PlugShare is an independent register that provides an up-to-date database of electric vehicle charging stations. To find a station near you, visit the PlugShare [website](#). Many EV cars also come with technology showing the nearest charging station.

PLUG TYPES FOR AC CHARGING

All electric cars come fitted with a charging plug. While most vehicles in Australia prior to 2019 used a Type 1 plug, **all new EVs from the 1 January 2020 will be Type 2** (also known as Mennekes).

Do you have a Type 1 vehicle?

Do not worry, there are adapters available that allow your vehicle to charge from any station with a Type 2 Connector. It is as simple as adapting your phone.



TYPE 2 PLUG

DIFFERENT USERS



RESIDENCES



BUSINESSES



NEW DEVELOPMENTS & RETROFIT PROJECTS

Charging stations at multi-residential, mixed use and commercial developments in Ryde: The City of Ryde encourages all future development applicants to consider future proofing their developments by provisioning EV charging infrastructure in the design of developments, as well as appropriate signage and dedicated charging spaces. Upfront installation will save on costs related to future additional electrical connections.

Can I install an EV charging station in apartment blocks? Yes you can. EV charging solutions are available for everyone, including apartment dwellers with or without a dedicated parking space and can easily be facilitated by separate meters. Contact an EV charging provider for further information tailored to your situation.

CONSIDERATIONS FOR EV CHARGER INSTALLATION

LEGEND



Research the market by contacting some EV charging suppliers.
To view a list of suppliers click [here](#).



Make sure the supplier provides you with a detailed quote containing equipment functions, correct usage, maintenance and warranty policies applied to hardware and installation.



Learn the charging requirements of your EV and follow the OEM's instructions at all times.



Find a location for the EV charger which is as close as possible to the parking location (this will drive cabling distance).



Chargers require electrical supply via ceiling or subterranean conduits. Check number of free slots on distribution boards and existing cable trays in carpark areas (for apartment blocks).



Arrange an inspection of your property and get a full assessment of important details such as the capacity limitations of the existing distribution board.



Mount: Chargers must be positioned at a convenient height and can be wall or pedestal mounted.



Understand electricity tariffs for charging in different times of the day; take advantage of cheaper off-peak electricity rates.



Check with your electricity supplier if they offer Green Power or consider the installation of a solar PV system at your property to offset the electricity required to charge your EV.



We encourage you to engage a qualified electrician (EVSE trained) to install the EV charging equipment in order to comply with all regulations in Australia. Most EVSE providers also offer installation.



Outdoor chargers must meet design standards for weather proofing and impact damage.



EVSEs can feature either a socket or a tethered plug and lead. Consult an EV charging installer for advice on the most suitable option for you including the option to Bring Your Own Cable (BYOC).



Commercial chargers: if authentication, remote control, payments, or management of electrical capacity are required, consider asking your EVSE supplier for options available to get a network monitoring system.



SWITCHING TO AN ELECTRIC VEHICLE CAN SAVE UP TO 75% ON FUEL AND HIGH MAINTENANCE COSTS DUE TO FEWER MOVING PARTS.



WHERE CAN I FIND OUT MORE INFORMATION?

Visit [City of Ryde's website](#), [Electric Vehicle Council](#) or the [Australian Electric Vehicle Association](#) for guidance on local service providers.

DISCLAIMER

Please refer to official specifications when purchasing an electric vehicle, including manufacturers' requirements and recommendations related to charging solutions. The City of Ryde recommends all users obtain their own independent professional advice before making any decision relating to the installation of EV chargers.

Any references to legislation are not an interpretation of the law. They are to be used as a guide only. The information in this publication is general and does not take into account individual circumstances or situations. An electronic copy of this report and additional information is available on [City of Ryde's website](#).

REFERENCES

- [Australian Bureau of Statistics, 2016, 'Survey of Motor Vehicle Use'](#)
- [Electric Vehicle Outlook 2019, BloombergNEF](#)
- ChargeTogether Fleets [website](#)
- Electric Vehicle Council [website](#)
- [Net Zero Plan Stage 1: 2020–2030 by the NSW Department of Planning, Industry and Environment](#)
- Australian Electric Vehicle Association [website](#)