EV CHARGING FACT SHEET — AT WORK

Types of Electric Vehicles (EVs)

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There are 3 main types of EVs which are:

- Battery Electric Vehicle (BEV) fully electric vehicle which uses only electricity and needs to be recharged
- Plug-in Hybrid Electric Vehicle (PHEV) can run on petrol or electricity and can be both refuelled and recharged
- Hybrid Electric Vehicle (HEV) runs on petrol and electricity and the vehicle will use electricity when it's more efficient to do so. The battery is charged by 'regenerative braking' and can't be recharged.

Types of Electricity

EVs can be charged by either AC or DC electricity. All BEVs and PHEVs can charge using AC electricity. AC chargers are generally found at home or at private businesses.

DC electricity is higher voltage and is delivered from high speed public chargers. Only cars that can convert DC to AC electricity (battery electric vehicles) can use these chargers.

Charging Speeds

Charging speeds can be broken down to 3 different speeds:

Level 1 (slow) AC - Delivers 2.4–3.7kW of power and is the same as plugging into a wall socket.

Level 2 (medium) AC - Delivers 7–22kW of power and is powered by a dedicated charging unit installed at home or at businesses.

Level 3+ (fast) DC - Delivers 50–350kW of power and is powered by public DC charging stations. These units are very expensive to install, require lots of power and are only suitable in public spaces.

| | Power | Range Added Per Hour | Charging Time | Where |
|------------------|-------------|-------------------------|---------------|------------------|
| Level 1 | 2.4 - 3.7kW | 10 - 20km range/hour | 5 - 6 hours | Home |
| Level 2 – single | 7kW | 30 - 45km range/hour | 2 - 5 hours | Home/work |
| phase | | | | |
| Level 2 – three | 11 - 22kW | 50 - 150km range/hour | 30 mins – 2 | Home/work/public |
| phase | | | hours | |
| Level 3+ | 50 - 350kW | 250 - 1000km range/hour | 10 – 20 mins | Public |



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Types of EV Connectors

Unfortunately there is no one standard connector type which connects the charging cable to the vehicle. However, the industry is becoming more standardised. The type 2 connector is now the most common for AC charging and fits popular models such as Tesla Models 3 and Y, Hyundai IONIQ 5 and BYD Atto 3. The CCS connector incorporates the type 2 connection but also has an additional 2 electrical contacts to facilitate DC charging.

The CHAdeMO connector is the other popular option for DC charging. Very few new EVs have this port. Fortunately, this is now being phased out in Australia and most manufacturers are using CCS.

There are adaptors available on the market to allow the adaptation of different connector ports.

EV Charging at Work

Benefits of businesses installing EV chargers

Sustainability is a concern for many people and as such, EV adoption is growing rapidly. Therefore, it's an opportunity for businesses to take advantage of this and there are a number of benefits to businesses who wish to install EV charging for their staff and/or customers. These are:

- Opportunity to attract customers who are sustainability-conscious as they are likely to support businesses who align with their own values.
- Opportunity to add another revenue stream.
- Increase online-discoverability as EV charging locations are added to digital maps hence increasing the marketability for your business
- Adds value to the business as an employer as it's another facility that employees can use at work

Different Types of Chargers & Costs to Businesses

- Level 2 'Single-Phase' Charging (max 7kW charging speed)

Level 2 AC charging (7 - 22kW) is the most popular option for charging at work. This requires the installation of a dedicated charging unit but will allow charging speeds of 7 – 22kW.

A single phase level 2 charging unit costs between \$2000 to \$3000 plus installation costs by an electrician. Most residential buildings use single phase power. Each installation is unique and the costs may vary.



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- Level 2 '3-Phase' Charging (max 11-22kW charging speed)

A 3-phase level 2 charging unit costs between \$1000 to \$3000 plus installation costs by an electrician. Most residential buildings won't have access to 3-phase power so the electrician may be required to do some additional work to connect the residence to the nearest 3-phase connector on the grid. These installation costs also vary from site to site but generally will be a lot more than a single-phase installation.

Installation costs generally make up the majority of the up-front costs. These often vary as each site is unique depending on the location and the existing electrical infrastructure. There can also be additional costs to facilitate an internet connection for billing.

There's also ongoing running costs to consider such as electricity and maintenance.

- Level 3 DC Charging (50kW+ charging speed)

In rare cases, some business will opt to install a fast DC charger. Level 3 DC Charging units range in cost from \$25,000 to \$100,000. These will deliver the fastest charging speeds for vehicles capable of fast charging. Please be aware that the installation costs will be a lot higher as generally extensive electrical infrastructure upgrades will be required on site often costing more than the charging units themselves.

Payment options

Depending on the provider that you choose to use, extra revenue can be earned by setting fees to charge customers and/or guests. Most providers will offer a range of options for people to pay ranging from in-app payments, credit cards, Apple Pay, etc. Setting up a competitive payment fee will ensure a long-term alternative revenue stream for your business. Generally, the faster the charging speed the more people can expect to pay.

Local installers

Some local installers to consider are:

- Jetcharge: <u>https://jetcharge.com.au/</u>
- EVUp: https://www.evup.com.au/
- Green Tech Engineering Solutions: <u>https://www.g-techengineering.com.au/ev-charging-station</u>
- EVSE Australia: https://evse.com.au/commercial-ev-charging/

