



# EV CHARGING REQUIREMENTS & SUPPLY

EO GENIUS

# Introduction



Figure 1:  
Fremantle City Council charging stations.

EVSE is the nations leading supplier of electric vehicle charging stations, charging cables and all EV accessories. Founded in 2015, EVSE has rapidly grown to become a leading authority around EV infrastructure through strong partnerships with leading EV charging companies and all of the major car manufacturers.

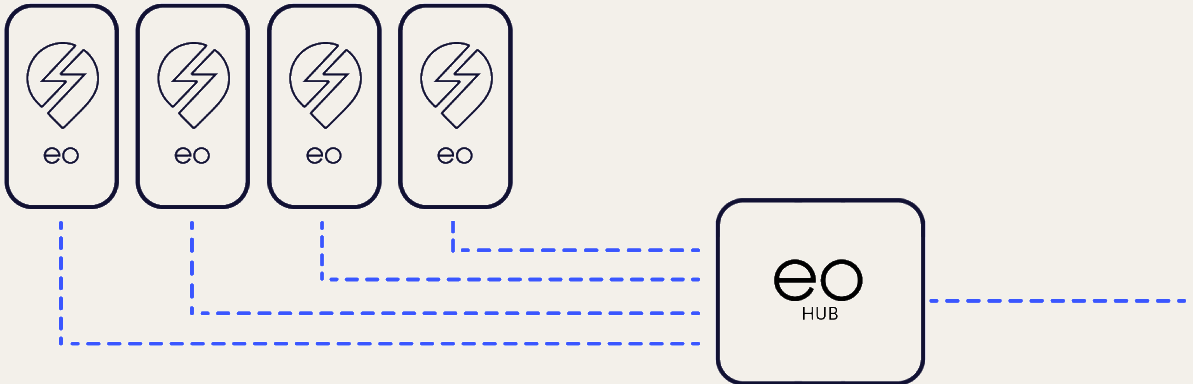
Our mission is to help power the future of Australian Mobility through clean, affordable and convenient electric vehicle charging infrastructure. We aim to achieve this through the provision of comprehensive electric vehicle charging solutions which bring together the leaders in EV charging technology with electric car owners all across Australia & New Zealand.

Our products have been installed and operated across Australia such as:



# eoGenius Technology

## EO Hub

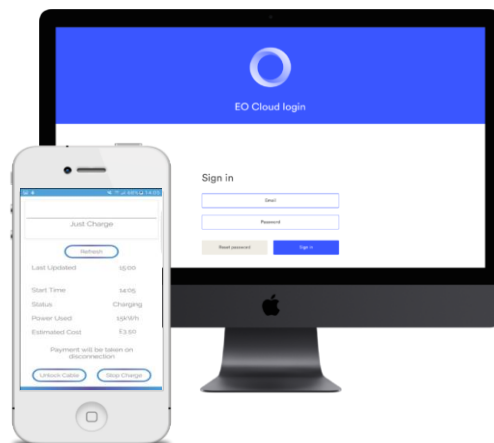


EO Hub is a little internet connected smart box that plugs into a Genius charger and puts it online.

One EO Hub can connect up to 32 Genius chargers, making installing multiple smart chargers super cost effective. EO Hub allows you to control your Genius chargers via EO Cloud and EO App.

## EO App

- Navigate to your nearest available EO
- View your charging history
- Charge session notifications



EO App Demo  
[Click here](#)

## EO Cloud

- Monitor your electricity consumption across your network of EO Hubs and Chargers
- Allow access to specific individuals
- Generate revenue by selling electricity at your own rates (optional)
- Full reporting capability
- Automated receipts

EO Cloud Demo  
[Click here](#)

## Common Questions

### **EVSE recommends the 20 to 100 Rule:**

Initially 20% of residents should be able to charge, however capacity and system design should consider 100% of residents should be able to access EV charging as the technology increases penetration in Australia.

This allows all residents to access EV Charging in future

### **Capacity**

Since most residential tenants park overnight, it is recommended to offer a charge rate of 32A single phase, giving an adequate 360 km of range overnight. However, if maximum demand cannot accommodate such a load, the charge rate can be lowered, but should be at a minimum 8A single phase, allowing around 100km of range overnight. This puts less pressure on building's supply. To make things easier, our EO Genius offers the world's most advanced load management feature that helps control the total loading once initial capacity is reached.

The average driver in Australia drives 50-150km a day. By encouraging residents to plug in every day, these charge rates should be more than adequate.

### **Access**

For all residents to have access to EV charging, new developers should lay down preliminary infrastructure works that facilitates future installations of EV charging stations. Distribution boards should be installed on every car park level, along with cable trays around the car park. It is recommended to have 1 DB for each car park levels. With that in place, all future installations works will only involve running new circuits from dedicated DB-EV along cable trays to isolators in the car park.

### **Pre-installed hardware**

Property developers can offer EV charging as part of the pre-sale campaigns so that charging stations can be installed prior to completion, with the costs packaged into the property itself or using this to value add to their development.

### **Green Star Rating- EV Charging**

The Green Building Council of Australia, under the Green Star Guide, specifies 5% of car parks should have EV charging stations installed. Unlike Solar or batteries EV charging is a visible & highly effective way to promote the green credentials of any development.


### **Who pays for power?**

In almost all circumstances, it is the user who ends up paying for power. You can use the eo cloud to monitor the charging stations and ensure each user is appropriately billed for their consumption or automate with our APP

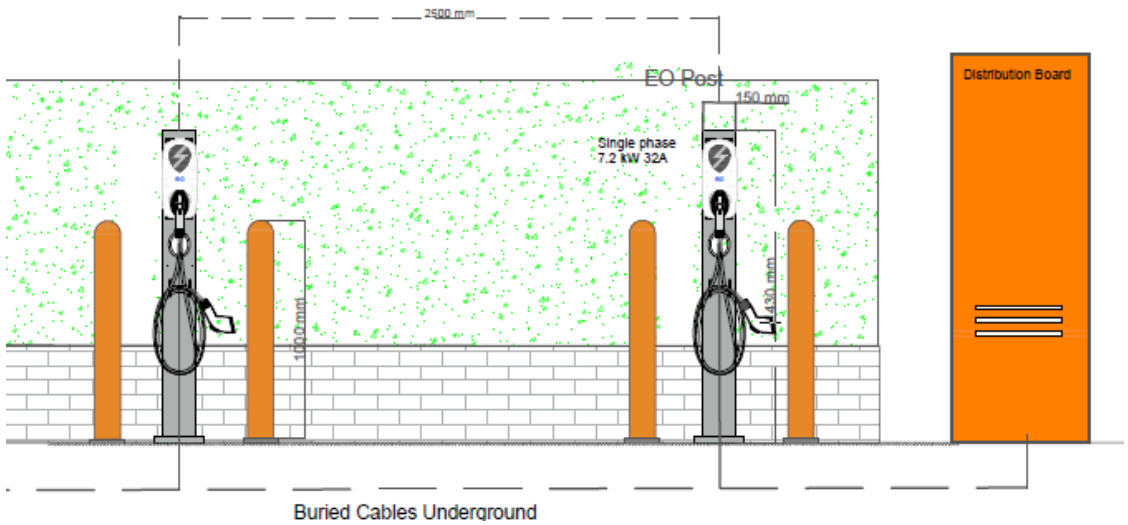
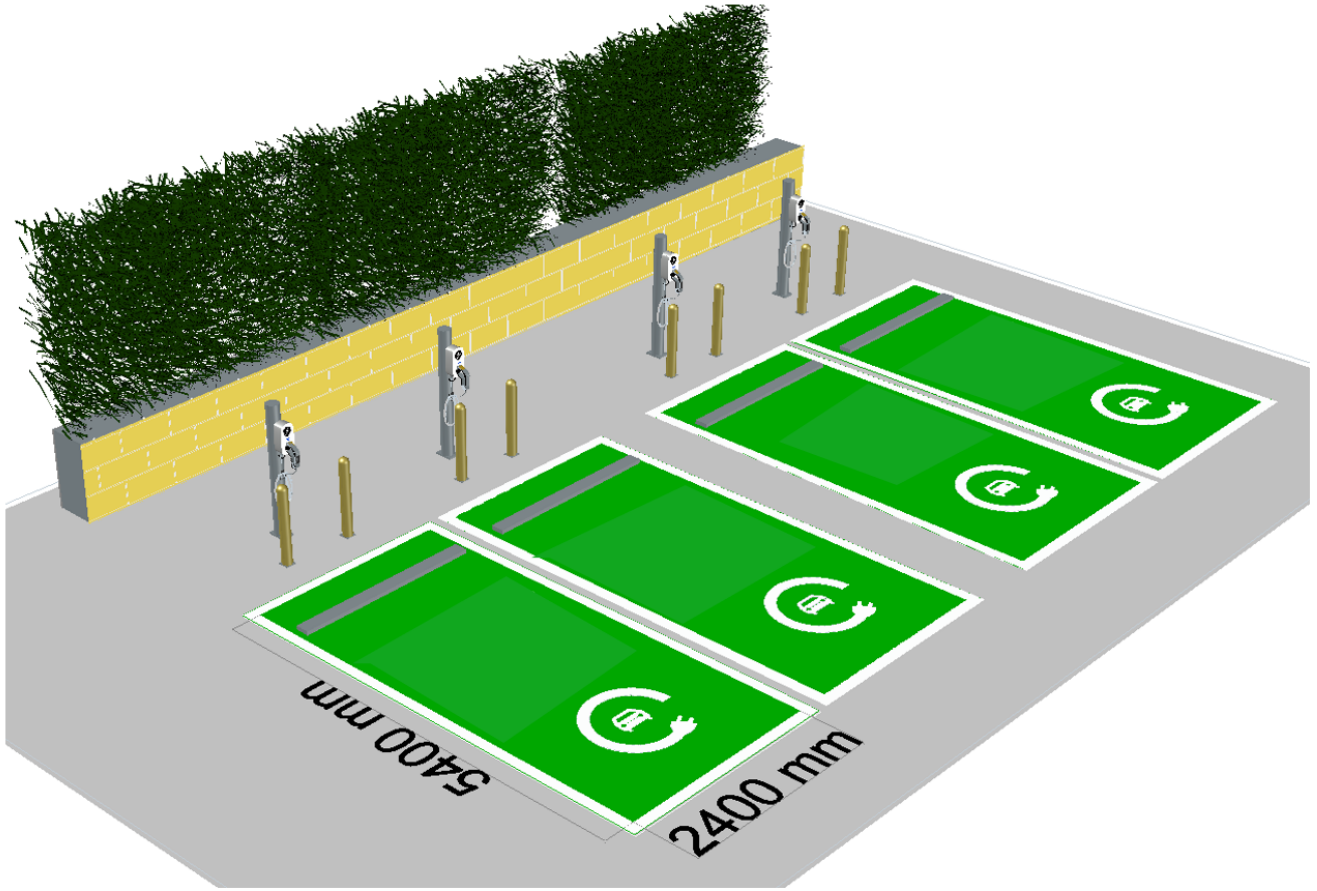
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## Charging Times

Charging times vary by the power of the charging station and the electric vehicles on-board charger. Most car makers recommend installing a EV charging station to improve recharging times indicated by kW (charging speed). EVE partnership with leading European brands delivers you safe, affordable & the fastest charging available in Australia.

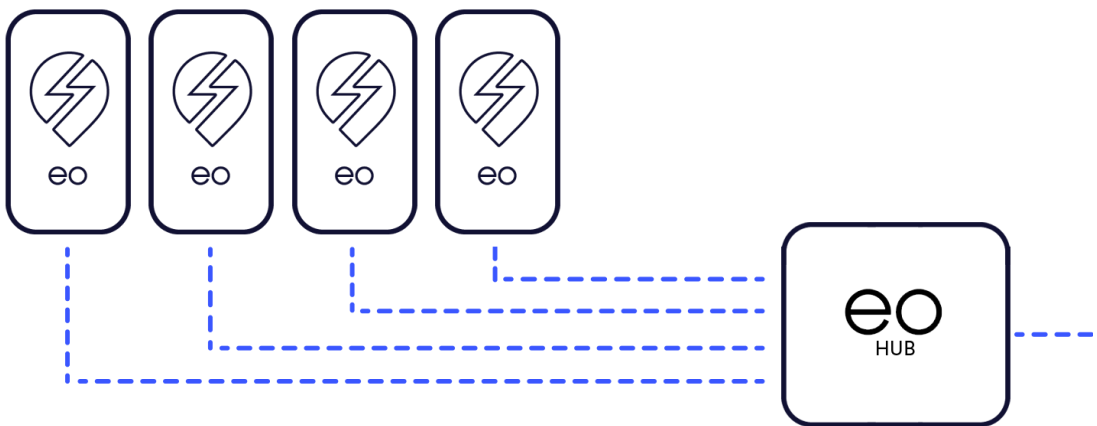
| <br>Charger Level | Electric Car Distance<br>(Nissan Leaf, BMW i3, Tesla Model S) |
|--|---|
| Level 1<br>240V 1.4kW  | 7.5 KM-15 KM /hour  |
| Level 2<br>240V 3.3kW-6.6kW  | 18-40 KM /hour  |
| Level 2 Fast<br>415V 7.4kW-22kW  | 45-140 KM/hour  |

# Schematics

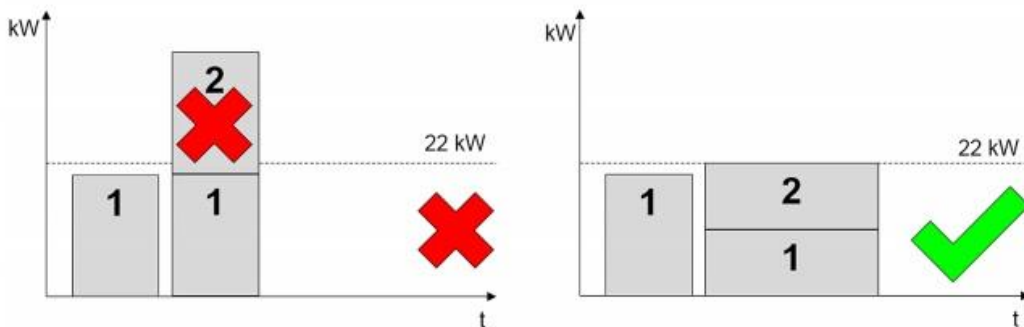


# Load Management

Load management is required where the combined power required to charge all cars plugged in exceed the building's electrical supply infrastructure for charging EVs, whether it be at a DB, sub-board or MSB level. Whilst this functionality is unlikely to be required in the near term, it will be crucial in ensuring that as close to 100% of lot owners as possible can charge their EVs in the future.

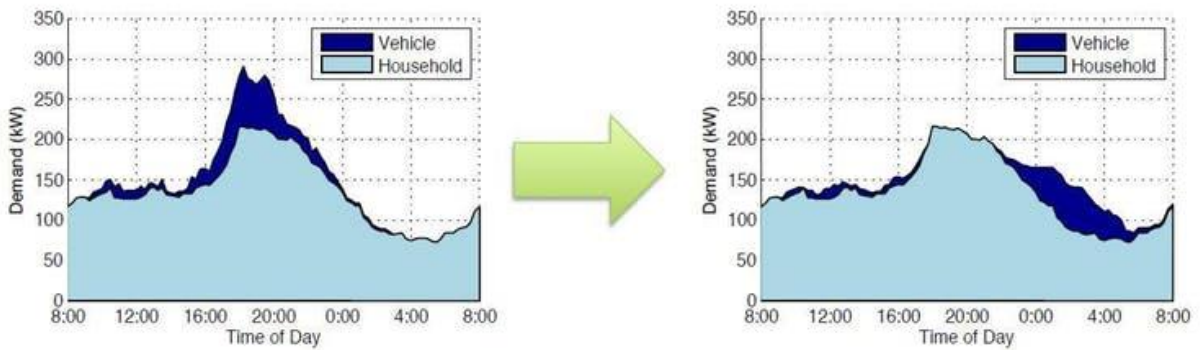


Example for 2 vehicles



**1** ... Charging power for vehicle 1

**2** ... Charging power for vehicle 2



Load Management is the most advanced safety feature offered by eoGenius system. This feature help protect the properties' electrical infrastructure while maintaining efficient operation of the Charging Infrastructure

Unlike other appliances, EV charging stations consume a large amount of power during operation. If there isn't any form of load control, these stations may cause unexpected power outages or damage the electrical Infrastructure of the property.

The eoGenius system has the functionality and capability to do 3 forms of load management with ALM being the most advanced form of dynamically managing the EV charging system based on available power.

### a. Static Load Management

In this option, The eoGenius has a maximum available power used for the EV charging stations via the eoCloud. The eoHUB then make sure that the entire EV charging system will not exceed that assigned limited current.

### b. Active Load management (ALM)

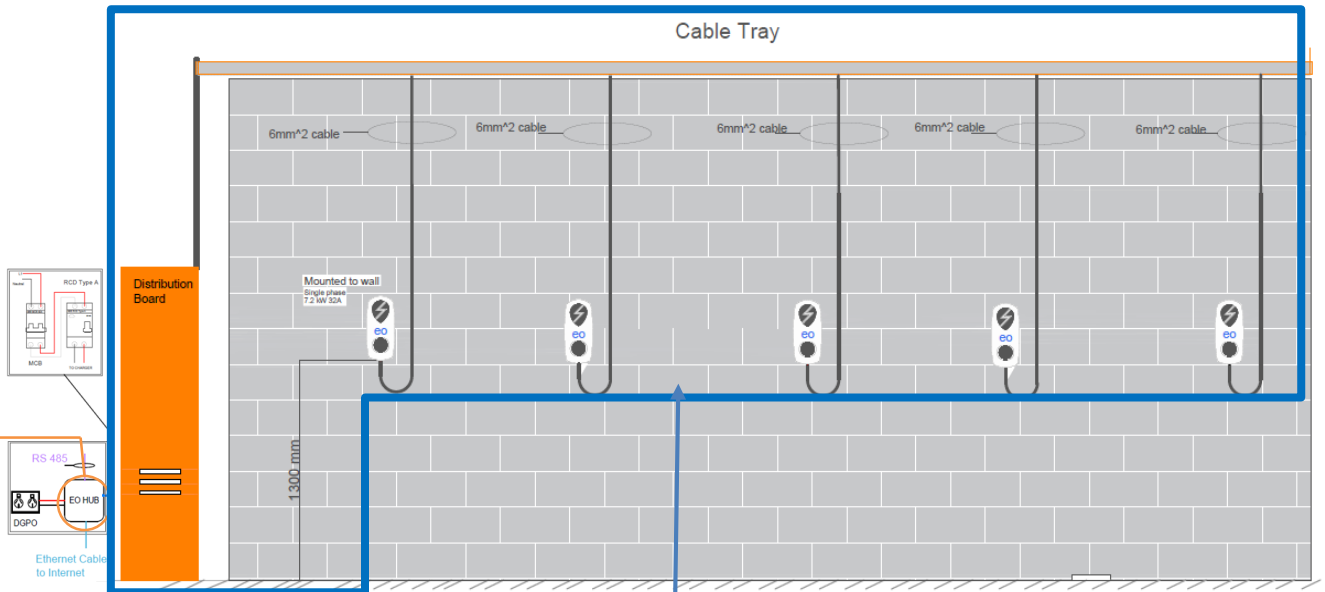
This option utilises Current Transformers (CT) installed at the switch board. The eoHub measures the current consumption of the site and compares this to the total available power of the site and then makes the rest available to the charging stations. If the site's consumption increases then the power available to the charging station decreases and vice versa. The threshold, therefore, changes dynamically every second.

ALM is very advanced technology with the eoGenius being the world's only ALM capable EV charging station.

### c. Scheduled EV Charging

This option simply allows the owner to specify the maximum current limit of each charging station on an **hour by hour basis**.

# Installation



## Installation (Performed by Principal's Electrician)

- Ensure that Power Capacity used for the EV Distribution Board at least match the minimum demanded power.
- Install RCBO for each charger at the Distribution Board (RCBO's rating will be provided by EVSE)
- Run power cables from the Distribution Board to the chargers (Cable size will be provided by EVSE)
- Provide double GPO to power up the eoHUB
- Allow Internet access (run Ethernet cable or install 4G modem) for the HUB
- Run RS485 from the eoHUB location to all chargers
- Ensure that the Earthing system is well-performed at the Distribution Board
- Following the Installation Guide to fit-off the chargers on the wall

## Installation Support (Performed by EVSE)

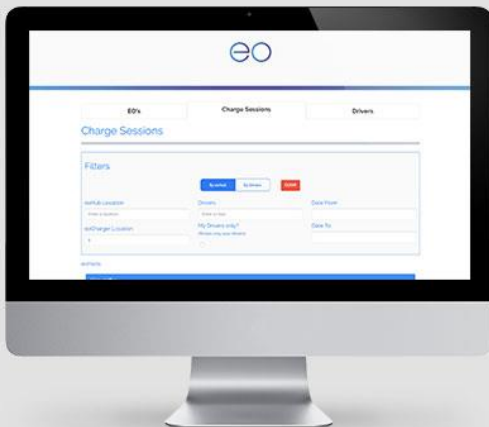
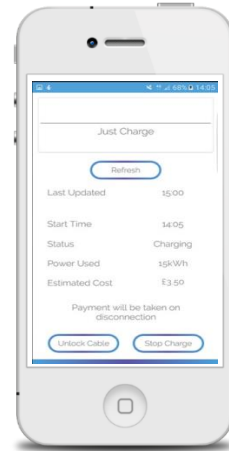
- Provide datasheet/specification of the chargers
- Provide Technical Support and Installation Guide to the electricians
- Provide Cables & RCBO list for the chargers
- Configure the eoHUB
- Perform final verification for the chargers
- Technical Support and installation support

# EO Cloud Management

## EO SMARTPHONE APP

Start, stop and pay for-charge – all from the palm of your hand.

- Navigate to your nearest available EO
- Pay for charging on-the-go
- View your charging history
- Charge session notifications



## EO WEB INTERFACE

Restrict access to specified individuals allowing access only via App

- Monitor electricity consumption
- Set pricing and generate revenue
- Links home & work charging to record benefit-in-kind tax
- Easy to add new users
- For maximum safety eoHUB monitors a building's power supply and actively manages the load on multiple chargers



Hubs Charge Sessions Drivers Hosts

Search...  Hub  Host Live Search

Canterbury Bankstown Council Canterbury Bankstown Council Hide Chargers

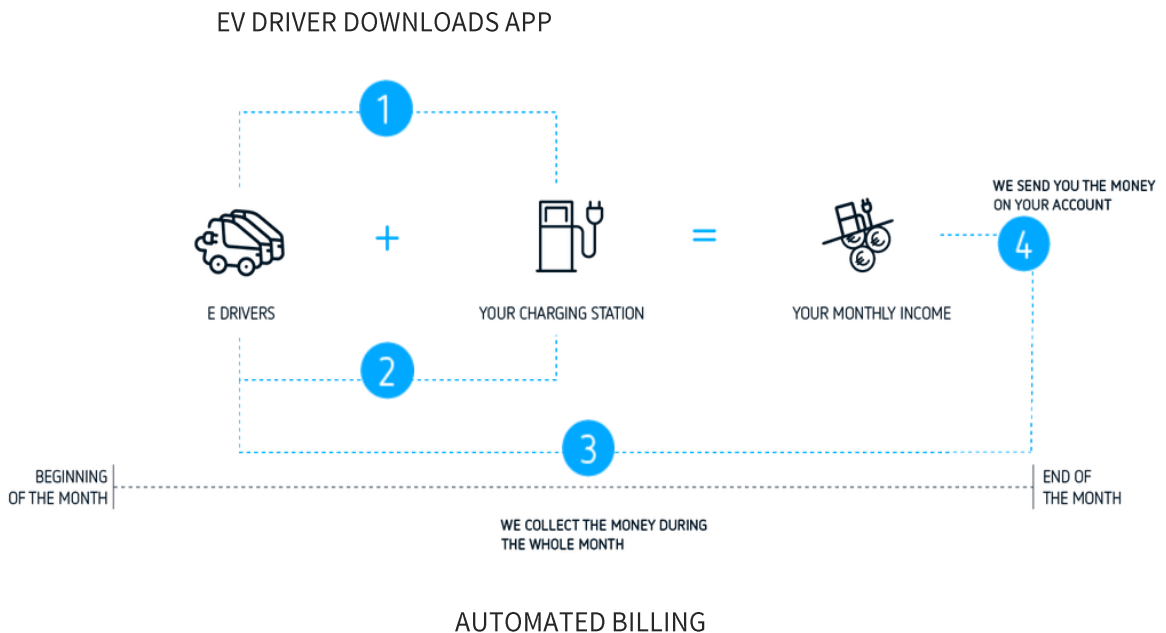
### Chargers [Charge session history](#)

| Bay ^ | Serial   | Max kW | Connected | Status        | User                   | Energy kWh | Control              |
|-------|----------|--------|-----------|---------------|------------------------|------------|----------------------|
| -     | EG-00202 | 7.2    | No        | Available     |                        |            | <a href="#">Open</a> |
| -     | EG-00203 | 7.2    | 01:10     | Charging      | Grace Period Unlimited | 8.37       | <a href="#">Open</a> |
| -     | EG-00204 | 7.2    | 03:18     | Car Connected | Grace Period Unlimited | 2.25       | <a href="#">Open</a> |
| -     | EG-00205 | 7.2    | 02:12     | Car Connected | Grace Period Unlimited | 1.91       | <a href="#">Open</a> |
| -     | EG-00206 | 7.2    | No        | Available     |                        |            | <a href="#">Open</a> |

EO Portal is a worldwide leader in EV Charging technology with future-proof solution in over 30 countries

- See a record of electricity consumption
- See how many charging sessions there have been on the charging station
- See the status of each of the charging stations (available, busy, unavailable)
- Bill customers to use the charging station
- Remotely diagnose issues with the charging station
- Allow remote firmware upgrades
- OCPP 1.6
- API integration
- World's most advanced load management

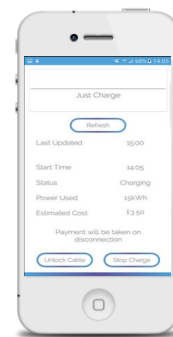
# EO Billing



## 1. EO WEB INTERFACE BILLING

Using the web interface building manager has a complete overview of usage across the system.

\*No fees on the billing process\*



## 2. EO SMARTPHONE APP BILLING

Automated billing.

- Navigate to your nearest available EO
- Pay for charging on-the-go
- View your charging history

#### Important notice

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EVSE is committed to supplying the world's leading EV hardware with integrated technology to manage and service the growing Australian market.

EVSE can provide solutions to residential, commercial & governments to help all Australian's integrate electric vehicles into their community. We can work with existing electrical networks or offer a complete turn key service.

Please contact our friendly team for expert advice & for more information on our comprehensive range of products and services.



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Charge Faster. Drive Further