CHARGING

EO Portal User Guide

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1 Introduction

The EO Portal allows users to interact with the eoHub and eoGenius charging stations in order to allow a smart charging experience. The portal is used by different people for different purposes:

- EO Administrators – manage the system
- Distributors – people who have several installers working for them. They are able to see all of the installations of the installers assigned to them
- Installers – people who install and commission the EO Charging equipment on a client's site
- Hosts – administrators of a client's site who can view & manage the stations on the client's sites

It is important to remember that each Genius charging station is attached to a hub. Hubs are managed by hosts (who can manage multiple hubs on one site) and that hosts are set up by an installer. When someone logs into the system, they can only see the information at their level and below. For example a Host admin can only see information about that particular host. Whereas a distributor can view all of the installations that their installers have completed.

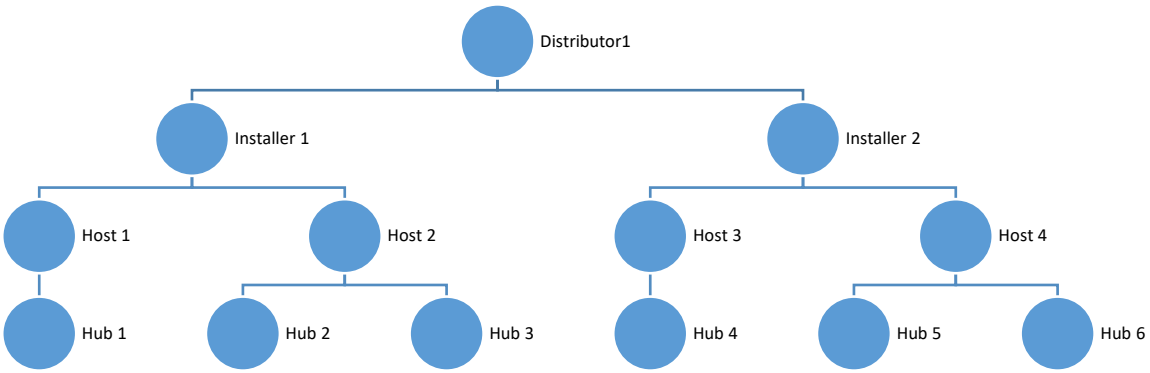


Figure 1 - EO Portal Hierarchy

1.1 Different Roles

This section details what can be viewed and what can be actioned by the different roles within the system. It should be noted that different views are available for different roles. For example a distributor can view the following tabs:

Figure 2 – Distributor's view of the portal

Whereas a host admin would be able to see the following:

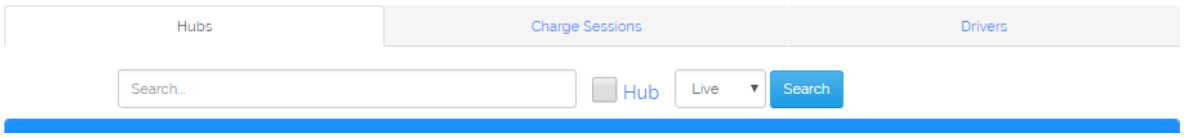


Figure 3 - Host admin's view of the portal

1.2 EO Administrators

EO Administrators are able to perform the following actions

- View all and modify settings across all installers, Hosts, Hubs and Drivers

NOTE – EO Administrators will also use another tool to manage the following:

- Set up Distributors and Installers
- Assign EO Stock to the installers and distributors

1.3 The distributor's view

The distributor is like an EO administrator but can only modify the settings for the installations associated with it from its installer group.

1.4 The installer's view

The installer is responsible for setting up and monitoring the settings of each of its clients or hosts

1.5 The Host's view

A host is the manager of a single or multiple hubs. Upto 32 charging stations can be connected to a single hub and there can be multiple hubs on one host's view. Therefore the host administrator is responsible for setting up the hosted drivers and monitoring the relevant charging sessions

1.6 An end customer's view

A hosted driver is not allowed to access the Portal. If a hosted driver attempts to access the portal then an unauthorised error message shall be displayed.

2 Stock Vs Live

From an installer's point of view, there are two halves to the portal

1) Information about stations and hubs that are in a live installation
2) Information about stations and hubs that are in the installer's stock.

Equipment is purchased from the EO Factory and at the point of dispatch, the relevant items are allocated from the stock of the EO Factory to the stock of the installer or distributor. These items are viewable by selecting stock from the drop down options:

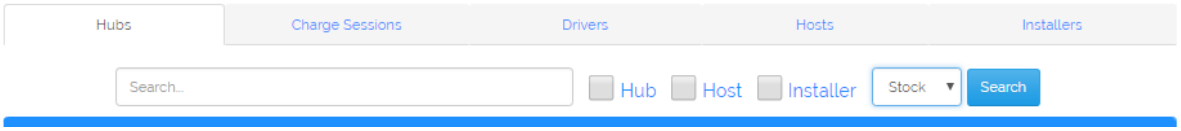


Figure 4 - data about the installer's or distributor's stock level

When equipment is set up at a client's site, then the equipment is moved from "stock" to "live".

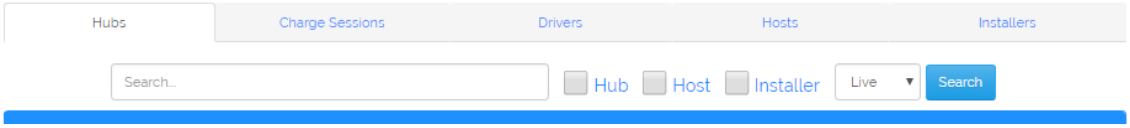


Figure 5 - data about the "Live Installation"

3 How to set up a host

It is the role of the installer to set up and configure a host. There are various stages involved:

1) Setting up the Host
2) Assigning hubs and charging stations
3) Setting the configuration options of the hubs and stations
4) Setting up the hosted drivers

3.1 Setting up a Host

1) Select the Host tab

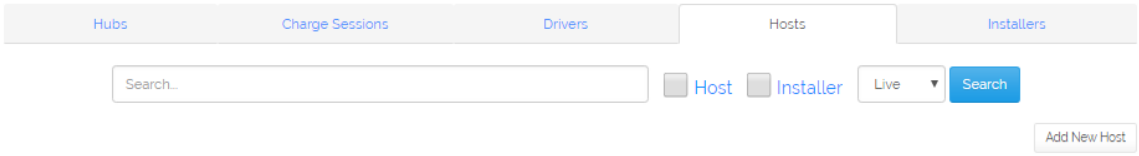


Figure 6 - Host Tab

2) Click “Add New Host”
3) A pop up should appear and complete all of the fields

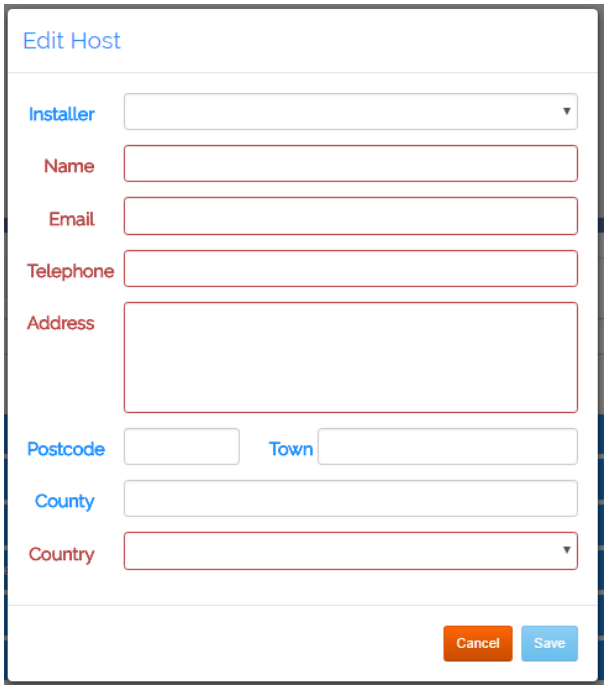


Figure 7 - Edit Host popup

4) Click Save
5) If the Hosts tab is selected, it should be possible to find the newly created host. Below is the Host for EO Headquarters at Tomo House which was set up by the fictional “EO Charging

Installer”

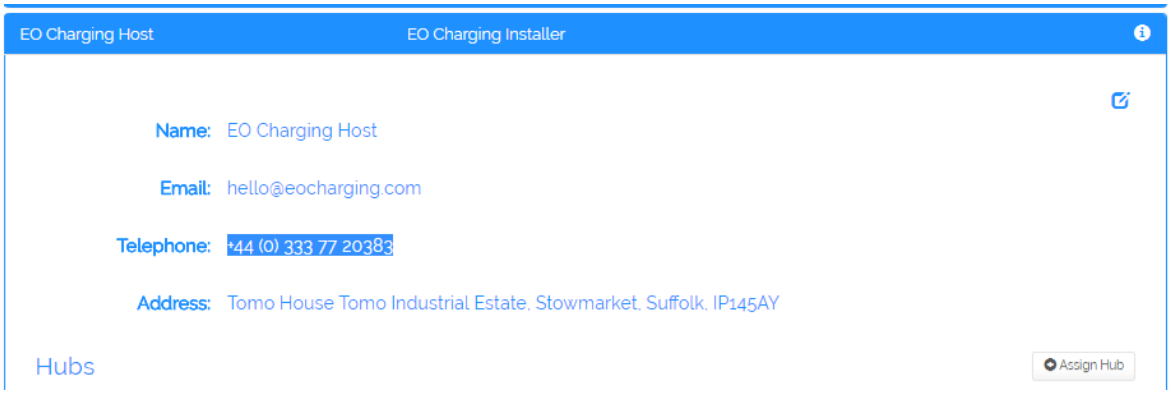


Figure 8 - Assigning a hub

3.2 Allocating Hubs and Stations

1) Now a hub has to be assigned to the Host. Click on the “Assign Hub” button
2) A Pop Up shall appear listing the available hubs that are assigned to the installer’s stock inventory. From the list, select one and assign it to the host
3) Now that a hub has been assigned to a host, then it is important for the charging stations to be assigned to the appropriate hub. Go to the Hosts tab and find the newly created host. Then expand the host to show the hub and click on the Assign Charger button

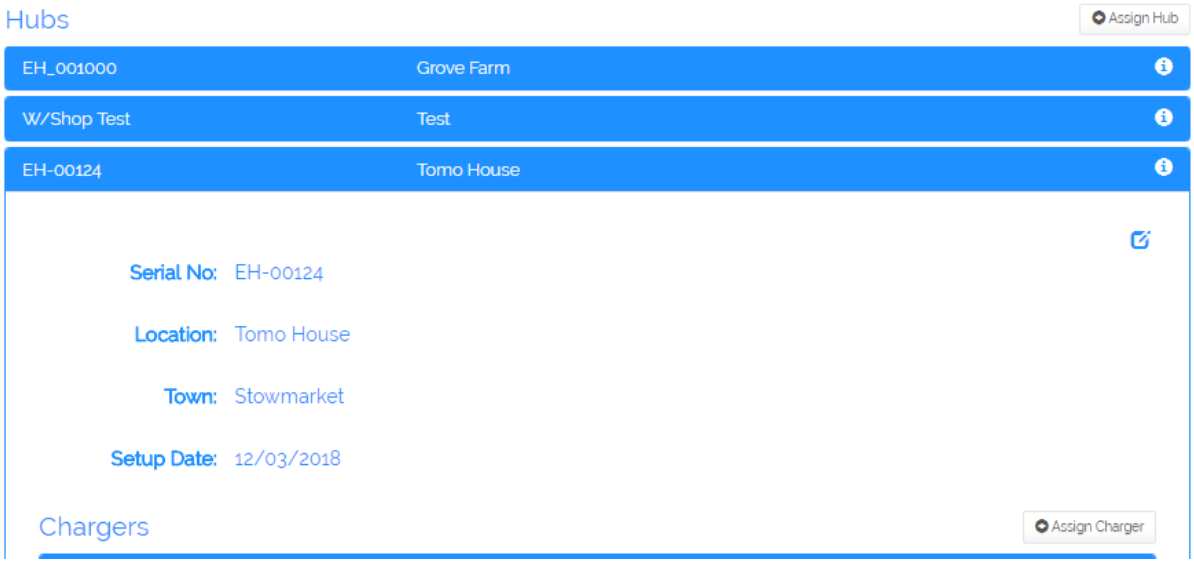


Figure 9 - Assiging Charging Stations

4) Select the charger from the available list and assign it to the hub.
5) Complete until all stations have been allocated.

3.3 Configuring the Charging stations configuration options

There are various options that need be configured by the installer, for example phase rotation. In order to set these values this needs to be set from the hosts page:

1) Select the Hosts page

2) Select the host and expand it:

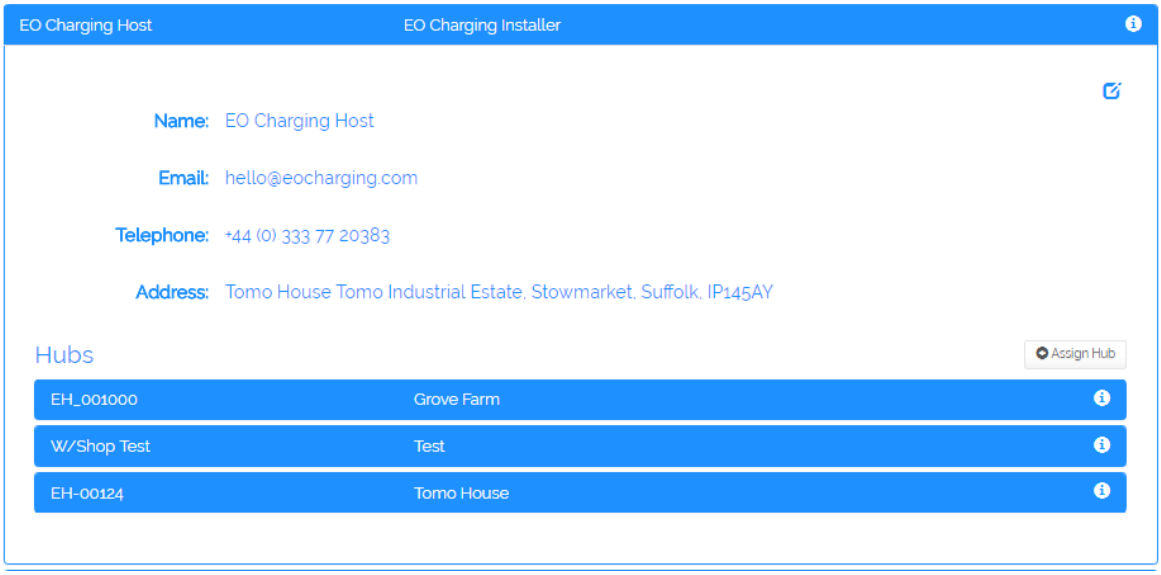


Figure 10 - Hub View

3) Expand the hub to display the charging stations available

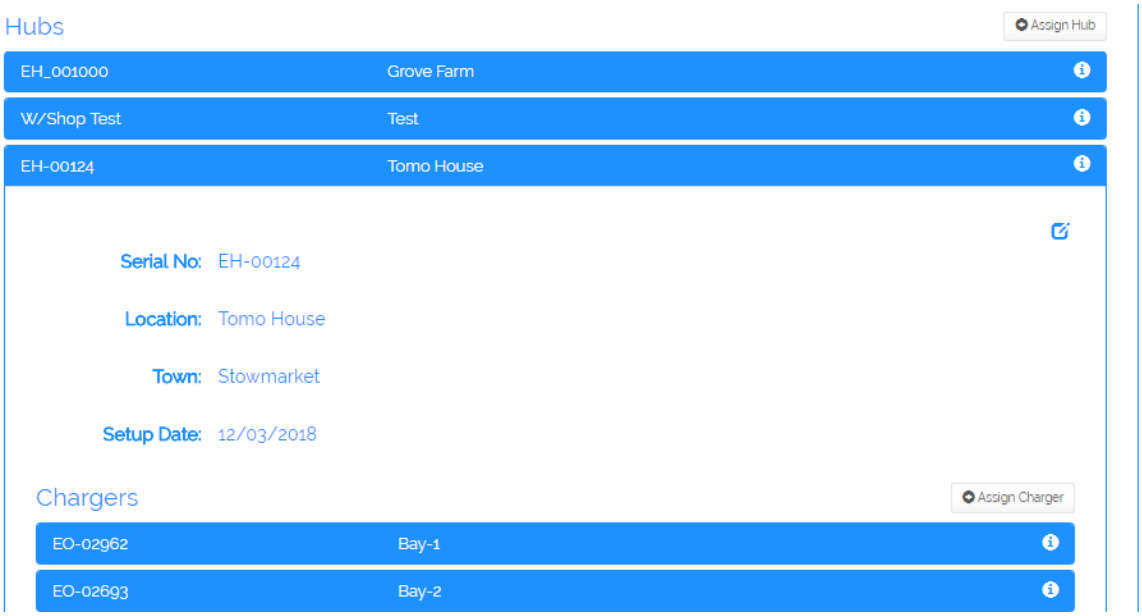


Figure 11 - Charging Station Overview

4) Expand the charging station of interest

Figure 12 - Editing the Charging stations configuration

5) Select the edit button (circled above) to display the various options:

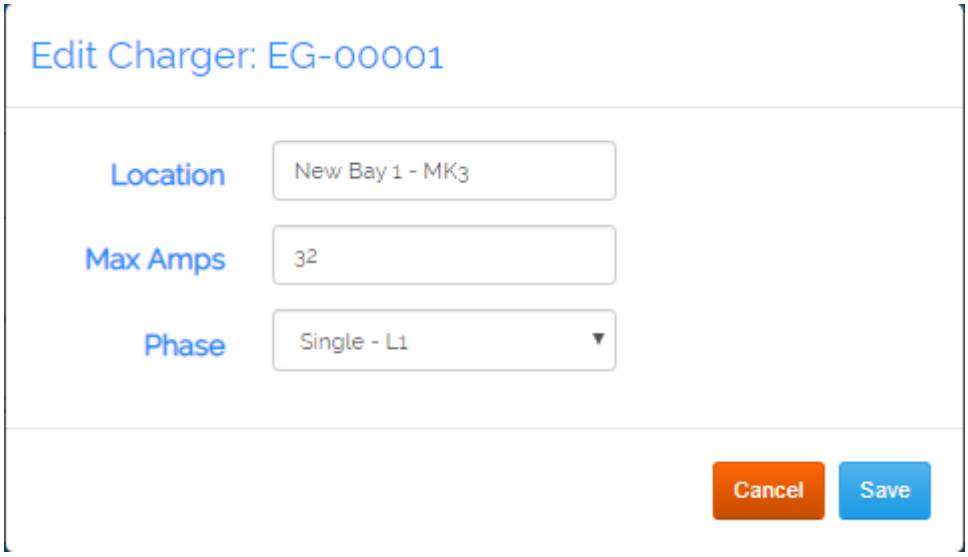


Figure 13 - charging station edit options

6) Location – give a textual description of the charging station's location

7) Phase – specify the phase that the station is connected to. For a single phase station the options look like this:

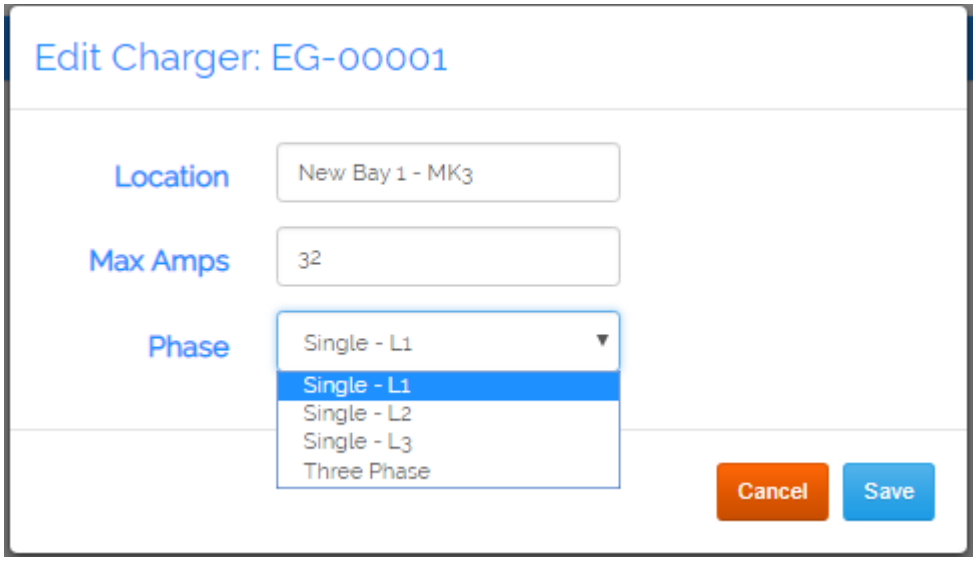


Figure 14 - single phase charging station options

Whereas a 3 phase station's options are as follows:

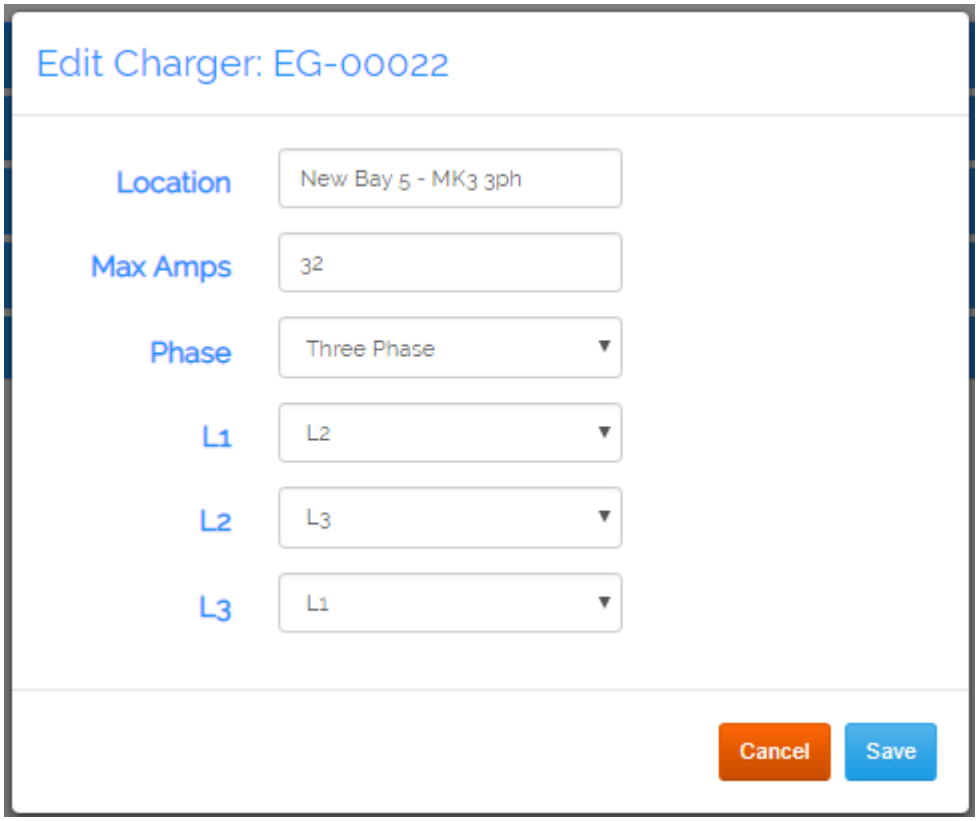


Figure 15 - 3 Phase charging station options

Note the option to specify the phase rotation……

8) Max Amps – use this option to specify the maximum current rating of the charging station

4 Setting the hubs configuration options

There are many options available to set up the hub. It is vital that the installer discusses these options with the host so that the correct configuration is set up. The following sections detail the various options

1) Click on the Hubs page and find the host's hub.
2) **If the hub is not communicating then it is important to resolve the communication issues first and ensure that the hub is visible on the live section of the Hubs page on the portal**
3) When the hub has been found then expand the hub to display the charging stations associated with it

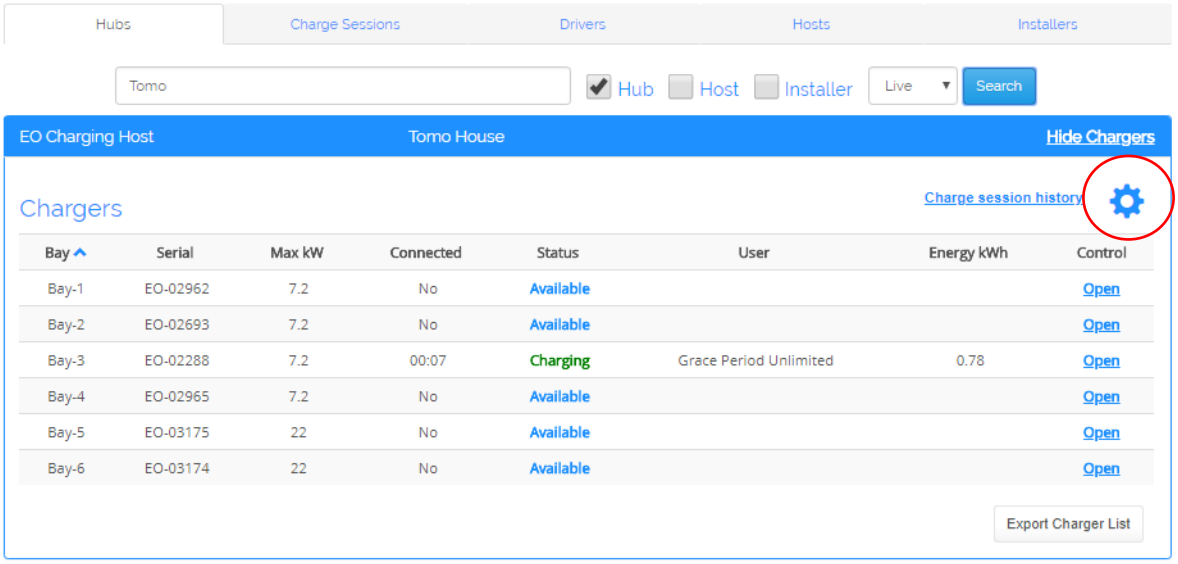


Figure 16 - How to access the hub settings

4) Click on the Gear (circled above) to display the configuration options

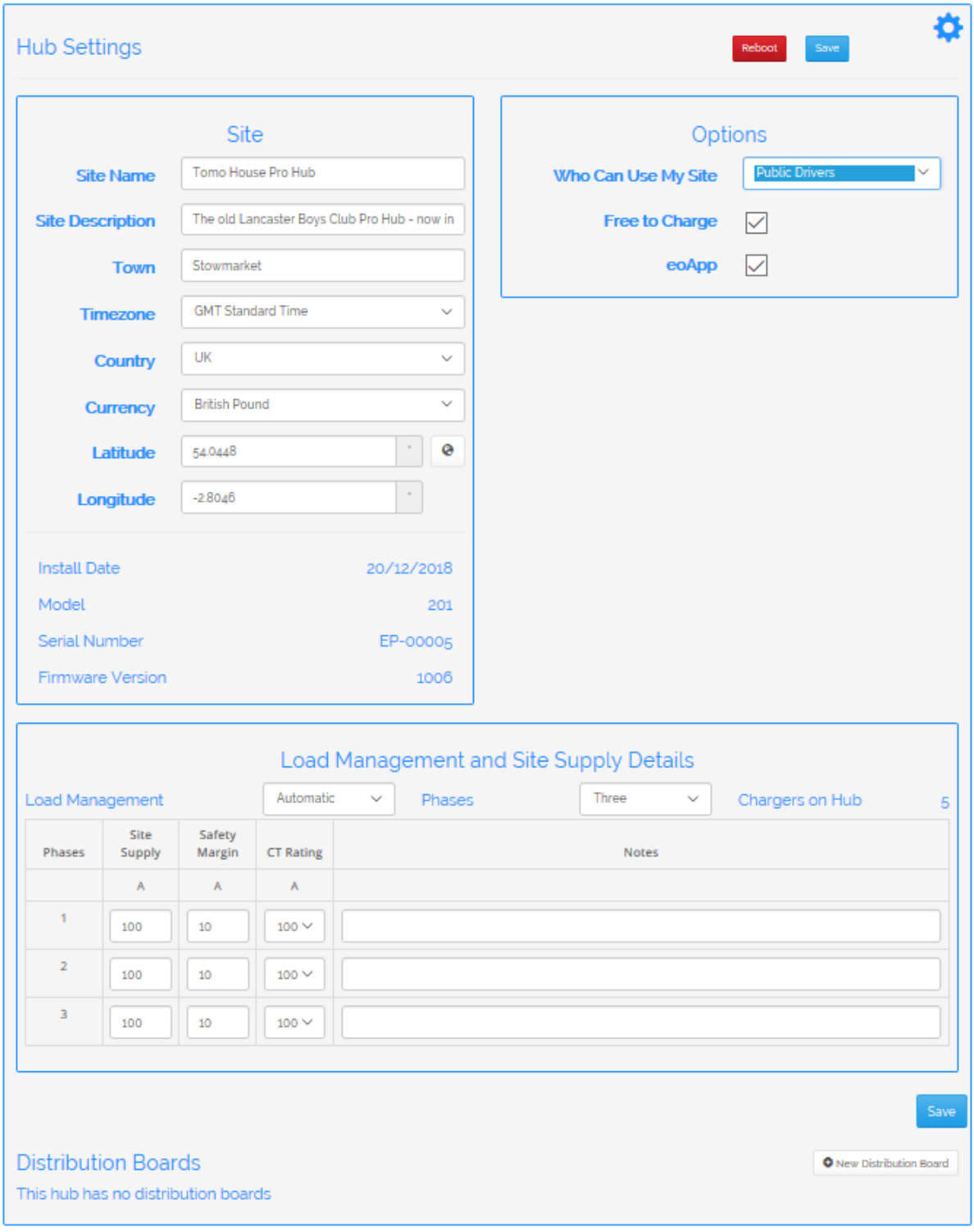


Figure 17 - Hub Settings

There are four groups of options shown above which are detailed below:

1) Site Information
2) Options
3) Load Management and Site Supply Details
4) Distribution Boards

4.1 Making a change to the Hub's settings

When a change has been made to the settings on the hub, then the changes need to be committed to the hub. This is a multi-stage process:

1) Make the change to the relevant settings
2) Save the settings
3) Reboot the hub to commit the changes to the hub.

NOTE – this should only be done when there are no charging sessions on the hub.

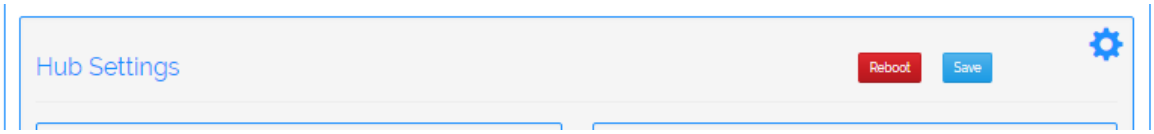


Figure 18 - Reboot and Save options on the hub settings

4.2 Site Information

This section gives details of the host's hub. This is perhaps the easiest section to complete and information includes:

- Site Name & Description
- Location
- Currency
- Longitude and Latitude
    - Take care with the order of L&L! It's easy to get the two reversed
    - There is a button with a globe. Click on this will load up your location in google maps to allow you to check that you have the right location!

Clicking on the globe button will display the Longitude and Latitude on Google Maps so that the position of the site can be checked.

Complete this section with as much information as possible as it helps with future support

4.3 Hub Options

This is perhaps the most complex and diverse set of options. The additional complication is that selecting specific options can reveal further options that need configuring. Therefore this section is quite detailed and specific care needs to be taken at this point.

4.3.1 Financial Billing Options

There are various charging options available to the host:

- Free to charge
    - Anyone can arrive at the site and then simply plug in and charge.
    - Hosted drivers can still use the APP or the RFID cards to associate themselves with charging sessions if they want to
- Pay by Time
    - The portal can be configured to financially bill drivers to charge by time. There is an initial rate of £X per hour (you can specify X in the portal).
    - It is also possible to set a secondary rate which applies after an initial time period has expired. This is to allow host owners to set a penalty rate to discourage drivers

from parking in the spot all day. For example it could be £1 per hour for the first 2 hours and then £10 per hour after that!

- Pay by Energy Consumed
  - If MID meters are installed then it is possible to financially bill for the energy they have consumed.
- Pay by Energy and Time
  - The portal can be configured to financially bill drivers for the time they are connected to the station (by time) and also for the energy that they have consumed (by energy).

The configurations options for the above features are all described below. It is also worth noting that the billing occurs on minute boundaries and partially completed minutes are rounded up e.g. if a driver unplugs after 32.4 minutes then the driver will be charged for 33minutes.

4.3.2 Hub Configuration Options

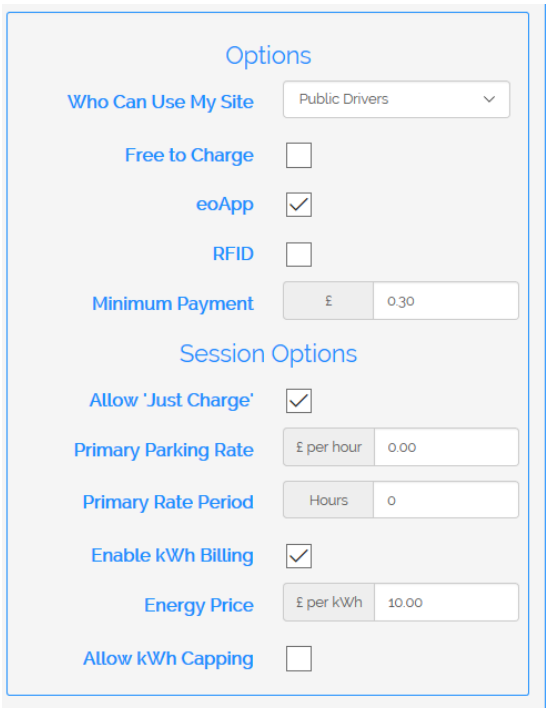


Figure 19 – All Hub Options Enabled

- Who can use my site
  - Members of the public or
    - The site will be viewable to everyone on the map of the app
  - The named hosted drivers
    - The site will only be viewable to the hosted drivers on the map of the app
- Free to charge
  - Just arrive, plug in and charge. It this is selected then all other financial billing options are hidden

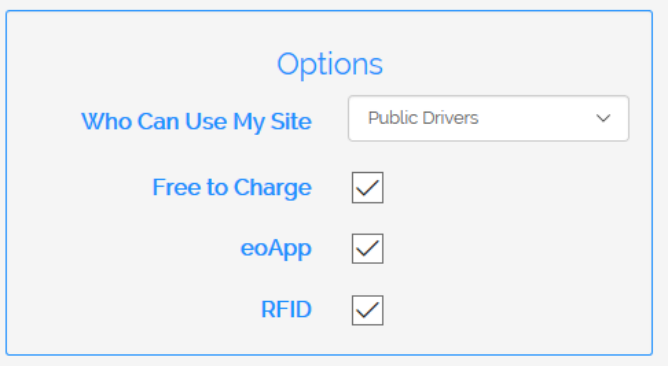


Figure 20 - Site selected as free to charge

- eoApp
  - enable this if you want drivers to be able to use the EO App to associate themselves with a particular charging station
- RFID
  - Enable this if you want drivers to be able to use an RFID card to associate themselves with a charging session

If "Free to Charge" is not selected then the other financial payment options are available:

- Pay by Time e.g. £1 per hour
- Pay by energy consumed e.g. £1 per KWH
- Pay by energy and time – e.g. £1 per hour for parking and £1 per KWH consumed

In order to enable these options then simply uncheck the "free to charge" option and the pay by time options will appear

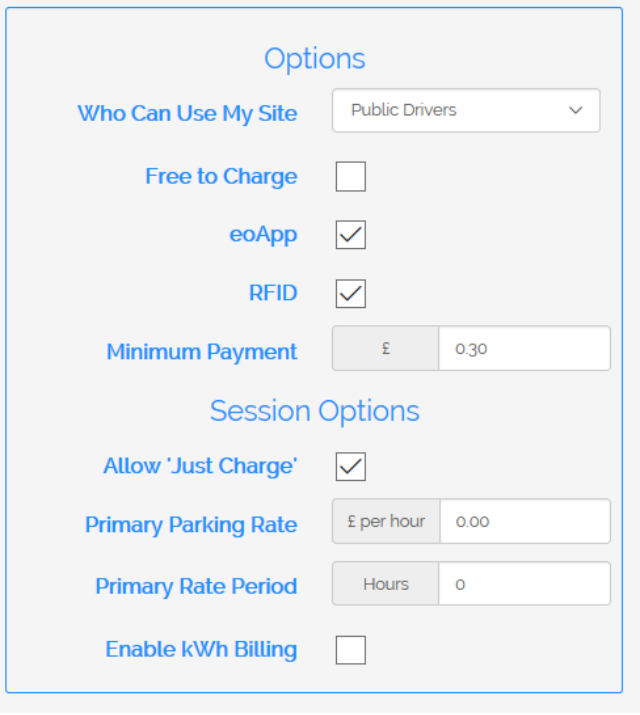


Figure 21 - Initial Pay by Time Options

- Minimum Payment
  - This is the minimum payment that will be taken for each transaction
- Allow Just Charge
  - This is to enable an option on the APP which allows the user to simply “just charge” rather than clicking through various option screens such as limiting by time or cost.
- Primary Parking Rate
  - Cost per hour of each charging session
- Primary Rate Period
  - If this is zero then the driver will be charged at the same rate for the whole time that the driver is connected.
  - If the time period is none zero (e.g. 2 hours) then a secondary rate is shown

Figure 22 - Secondary rate option

- Enable kWH Billing
  - If this is selected then a pop up is shown making the host aware that there are some territories that require special installations e.g. MID Meters

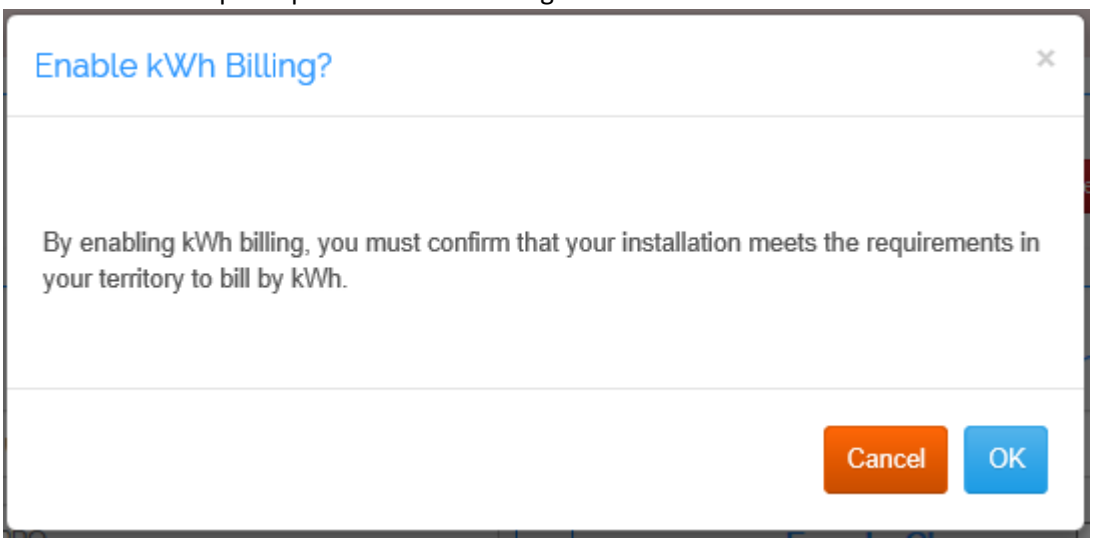


Figure 23 - making the host admin aware of the requirments for their site

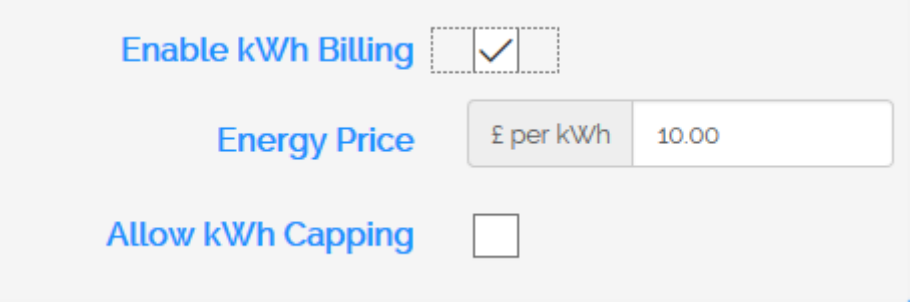


Figure 24 - Billing by KWH

- Allow kWh Capping
    - This option enables a feature in the EO App where the user can specify how much energy they want to take. The charging session will then stop after this energy has been consumed.

5 Load Management Options

As part of the host's configuration options, it is possible to set up Load management. This functionality is a key feature of the Hub and one that needs to be set up carefully. There are currently four load management options:

- None – this means that the supply to stations should be adequate. For example if there are 3x32A stations connected to a hub, then there needs to be a guaranteed 96A available to the stations
- Static Load Management – a current limit is specified and then the available power is distributed to the connected vehicles. For example the premise supply is 100A, the safety margin is 10A and the site uses 26A, then the static limit that is available to the charging stations is 64A. If there is one vehicle then it can charge at 32A. If there were two cars, then the dynamic limit would be set to 32A. If there were three cars, then the dynamic limit would be set to 21ish amps etc. If the number of cars increases so much that the limit is set to below 6A, then one vehicle is set to zero amps. It is basically queued. When one vehicle stops charging (it is full) then the 6A is transferred to the next vehicle. EVs can't charge below 6A.
- Automatic Load Management - It is the same basic principle but instead of having a fixed or static threshold. The threshold is dynamic. The hub measures the current consumption of the site, compares this to the limit 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.
- Scheduled – this options allows the user to specify the maximum current limit of each charging station on a hour by hour basis.

The Load management settings are defined in the "Load Management and Site Supply Details" box.

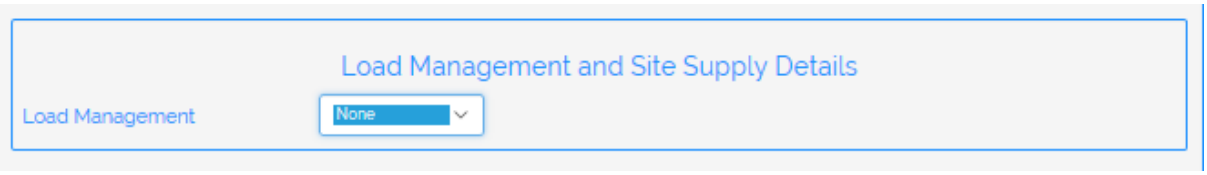


Figure 25 - Load managment settings

If No load management is selected then there are no options which is as per Figure 25. However, if one of the load management options is selected then additional configuration options are displayed. The example below shows the options for static load management:

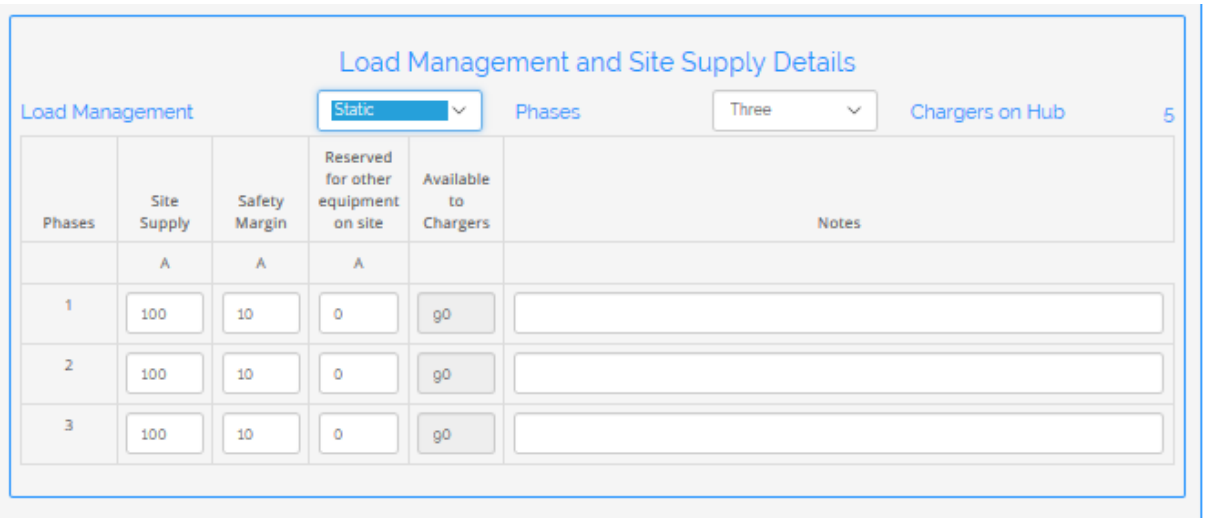


Figure 26 - Static load management options

5.1 Static Load Management

The following options must be configured if static load management is to be used:

- Select the number of phases
- Specify the site's maximum current supply
- Specify the safety margin. This is automatically calculated at 10% but can be over ridden.
- Identify how much current will be used by the rest of the site. This figure needs to be calculated by the host and the installer
- If possible then add some notes explaining why the current limits were calculated. This will help in future diagnostics

5.2 Automatic Load Management (ALM)

In order to have automatic load management enabled, then Current Transformers must be installed and connected to the hub. The following options are available when the ALM option is selected

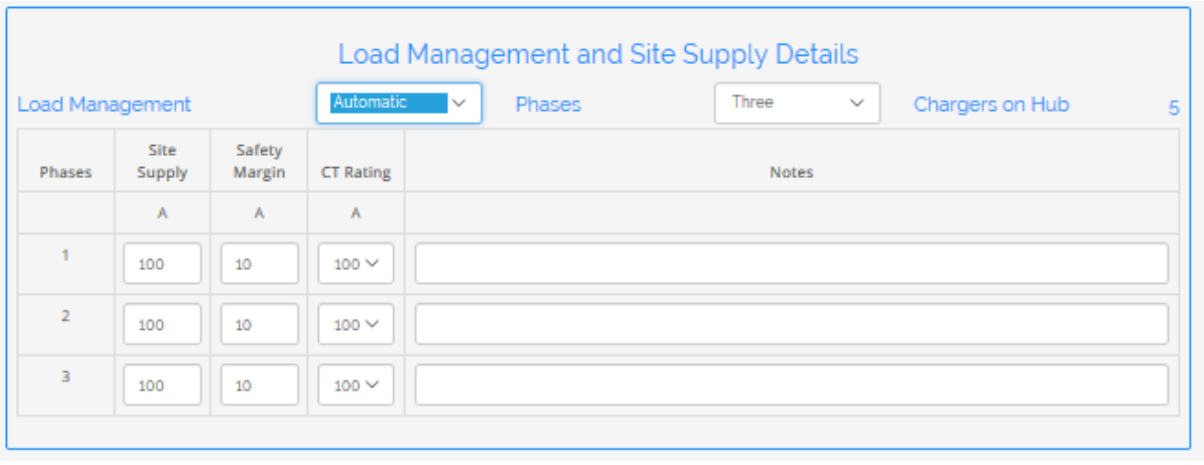


Figure 27 - Automatic Load Management Options

- Select the number of phases
- Specify the site's maximum current supply
- Specify the safety margin. This is automatically calculated at 10% but can be over ridden.
- Specify the rating of the current transformers.

5.3 Scheduling (Load Management)

The options that appear when Scheduling is selected are exactly the same as the options for Static Load Management – see Figure 28.

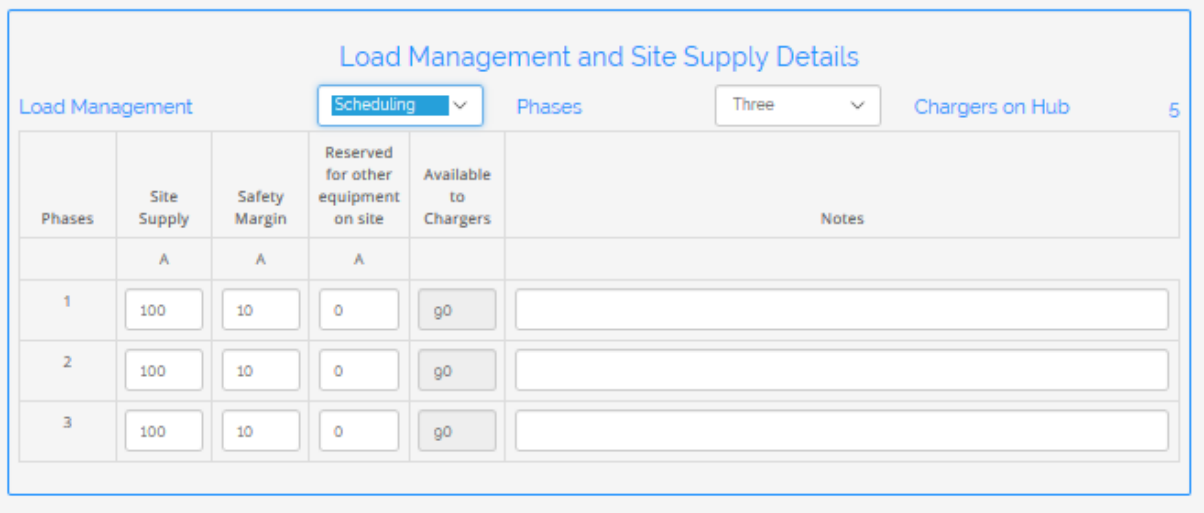


Figure 28 - Statis Load Management options

When the hub options have been saved, then a new Scheduling tab appears:

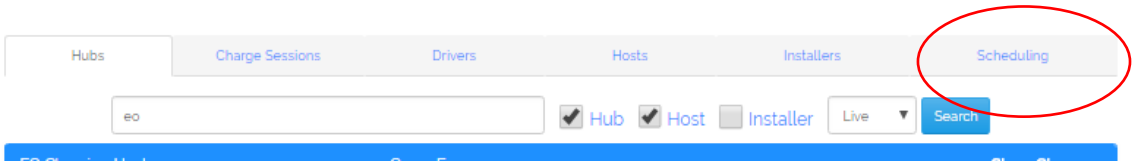


Figure 29 - Scheduling Tab for Scheduling load management

As can be seen below, it is now possible to manually set the current limit of each charging station (for the specified hub) on an hour by hour basis:

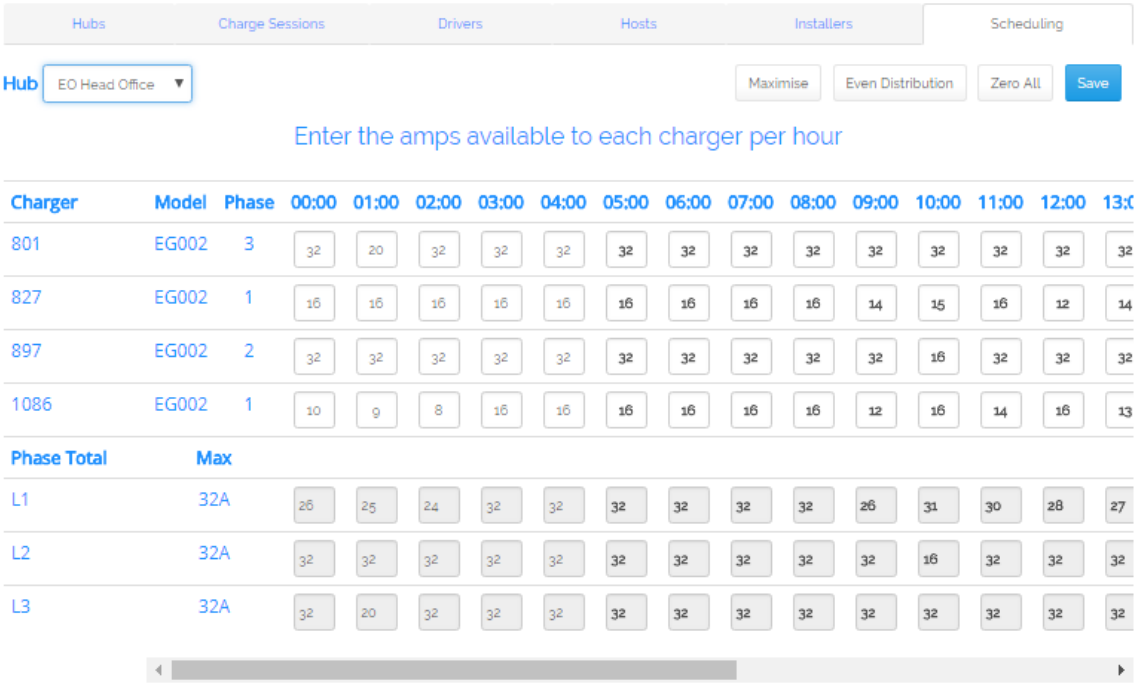


Figure 30 - Scheduling options

As can be seen from Figure 30, it is possible to view the current settings of each charging station and also the maximum available current per phase. This information is calculated from the hub settings and you will note that the max current in Figure 30 matches the “Available to Chargers” value in Figure 26.

Entering all of the current limits by hand can be a laborious task. Therefore some tools have been made available to help with this

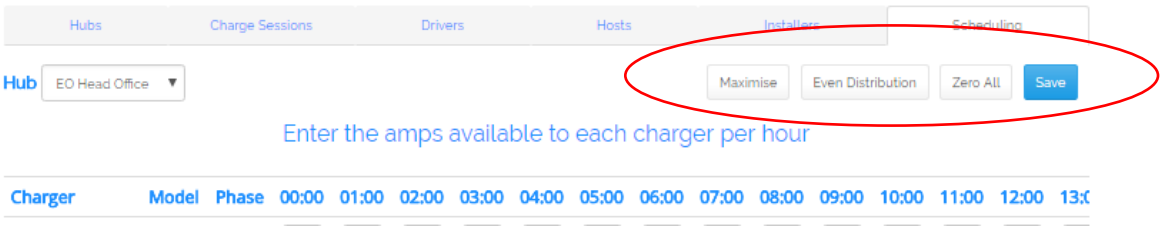


Figure 31- tools to help with scheduling

- Maximise
  - This will apply the maximum amount of amps possible to each charger on site sequentially until all the site supply is consumed.
- Even distribution
  - This will evenly distribute the amps available between all of the chargers on the site.
- Zero All
  - This will zero all the current values providing the user with a blank canvas to start from

5.4 Distribution Boards

If the charging stations are connected up using dedicated distribution boards then it is possible to set up a virtual distribution board in the hub and then assign the relevant charging stations to them. Setting up a distribution board and assigning charging stations is as follows:

- Open the hub settings
- At the bottom, select "+New Distribution Board"

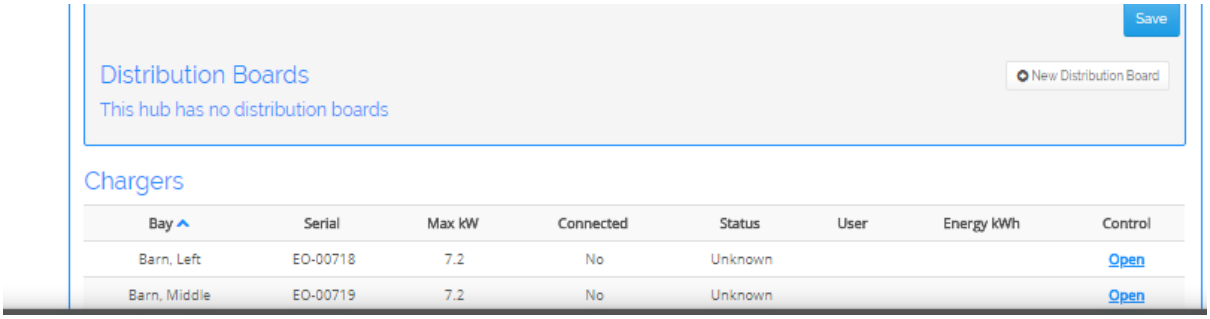


Figure 32 - Option to add new distribution board

- Enter the name and the location to create the distribution board

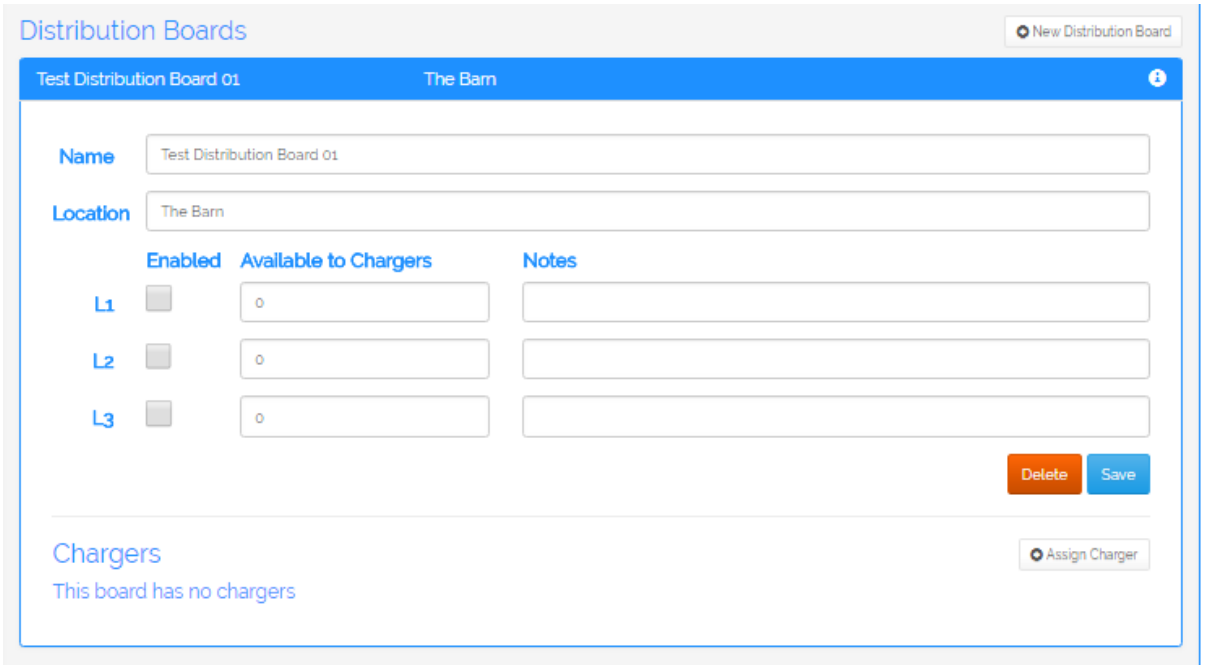


Figure 33 - Newly created distribution board

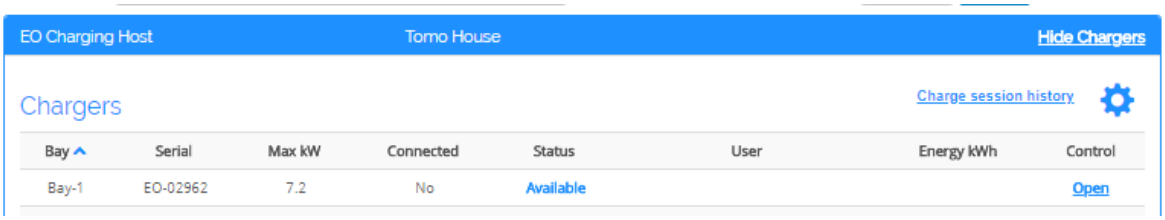
- At this point the details of the board should be added:
  - Phases
  - How much current is available to the chargers
  - Notes
- Then Charging stations should be assigned to the board by clicking on the Assign Charger

The distribution board acts as a secondary safety limit that will prevent the assign chargers from exceeding the limit of the board.

6 Charging Station Options

When a charging station has been set up and configured correctly, there are various functions that are available to a host admin for the administration of the station.

From the Hubs page, expand the hub of interest to show the charging stations connected:



Select the Open option and then this will display the options and actions available

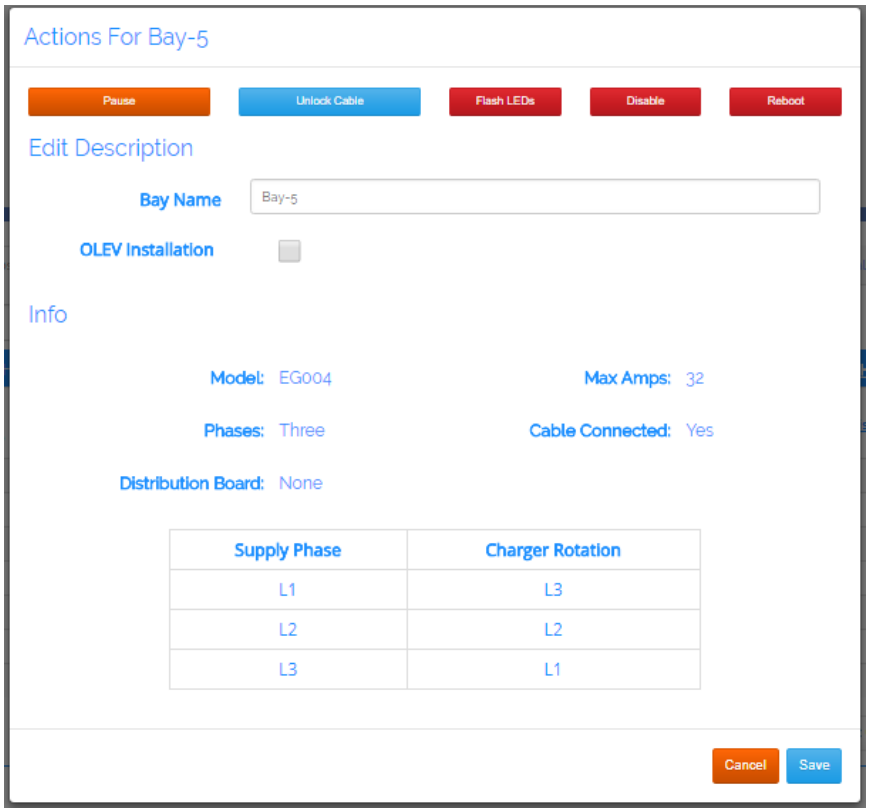


Figure 34 - Charging station options for an active charging session

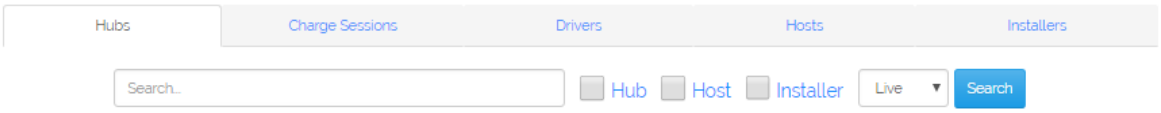
When a charging station is in use, then the following options are available:

- Pause/Resume the charging session.
- Unlock the cable – this can be used in a fault scenario where the host admin can remotely unlock the cable on the charging station
- Flash LEDs – this is a useful test function at the point of installation wherby the LEDs can be flashed to check connectivity
- Disable – put the charging station into permanent pause mode so that it cannot be used by vehicle owners
- Reboot – only to be used under advise from EO Support. The station will only reboot if there is no vehicle plugged in.

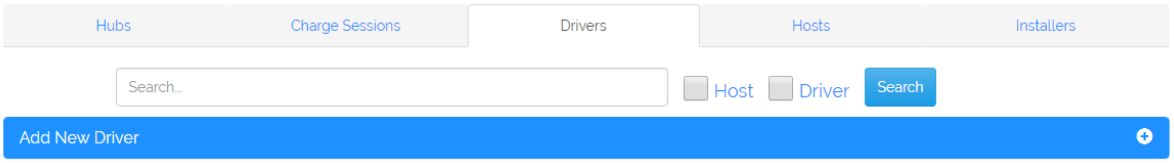
7 Setting up a Host's administrator or drivers

It is the responsibility of the host's administrator to set up drivers if they want to have their charging sessions recorded. It is the responsibility of the installer to set up the Host's administrator. Then the Host's administrator or the installer can then set up the subsequent drivers. In order to set up an administrator or driver the following steps should be taken:

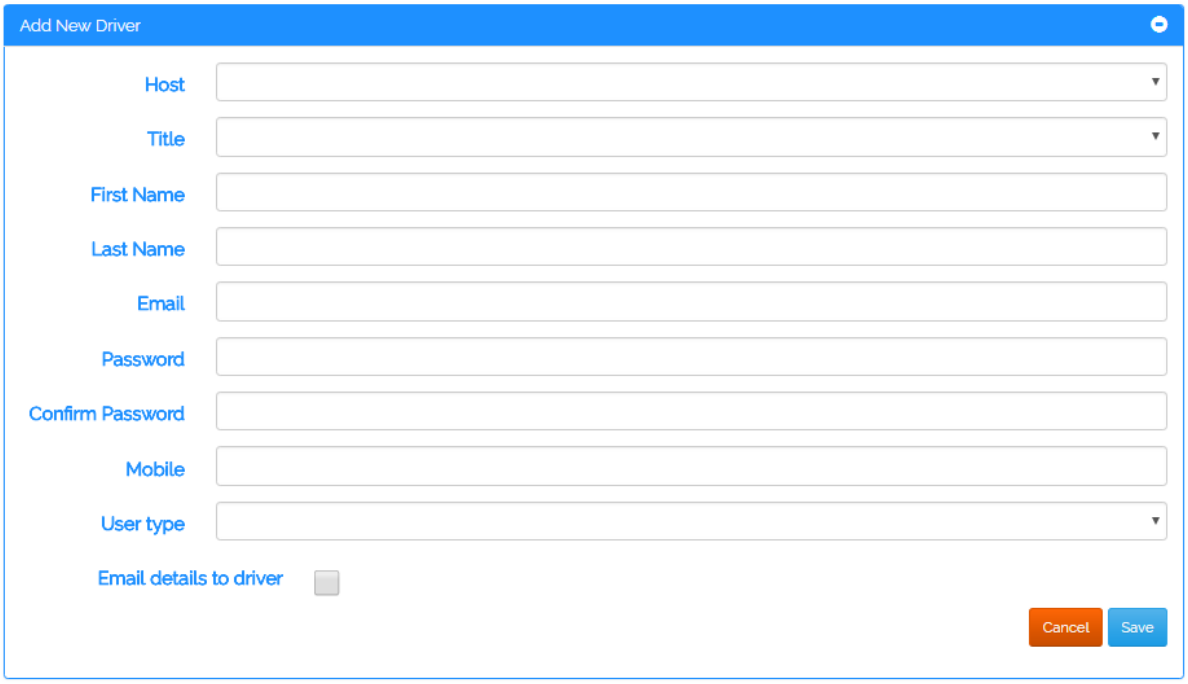
1) Click on the Driver's tab



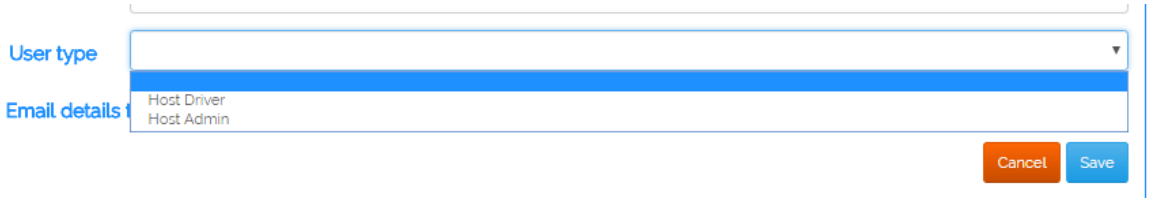
2) Click on Add New Driver



3) Then complete the relevant details



4) The fields of note are the Host (specifies which host the driver is assigned to) and the User Type (Host Driver or Host Admin)

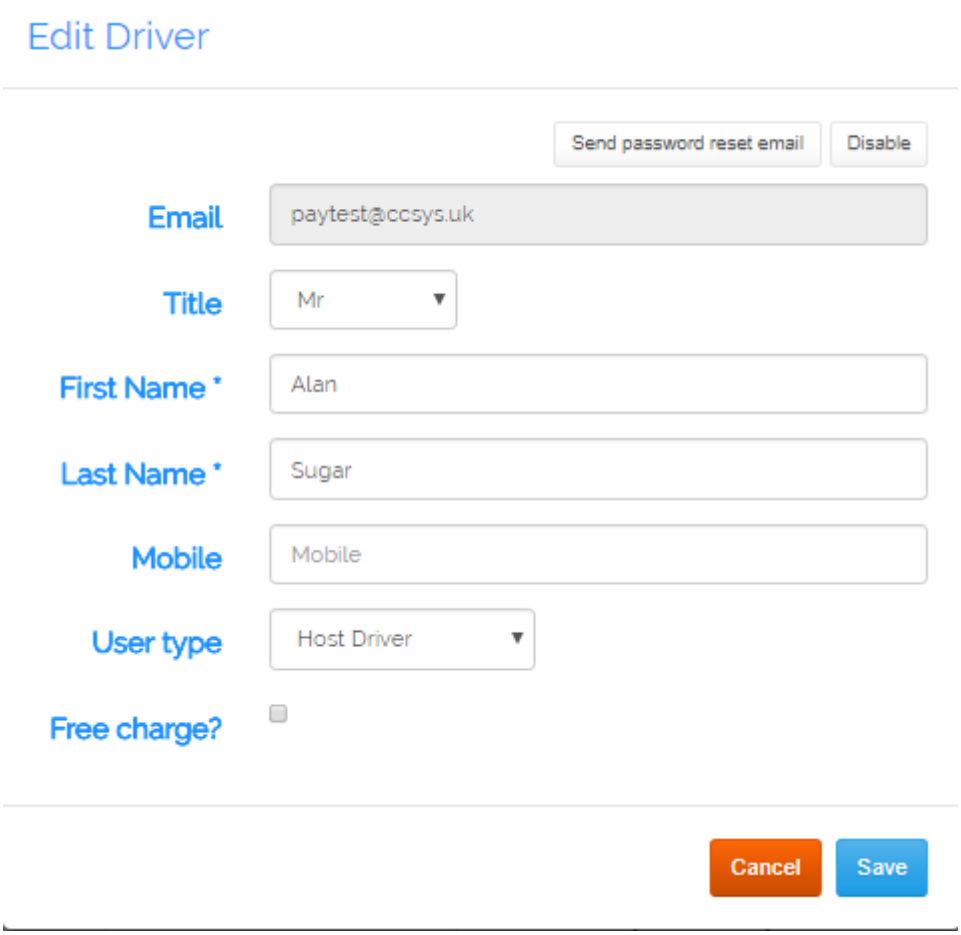


5) Complete **all** the fields and select whether the new user is a driver or an administrator
6) When save is selected, then an email will be sent to the user with the initial details. It is recommended that the user updates the password to their choosing as soon as possible. However this is only true if the "Email details to driver" option is selected.

7.1 Free to charge

If a site is set up as Pay as you charge for members of the public, it is possible to set up hosted drivers so that they are not charged for charging i.e. free to charge for hosted drivers.

1) In order to do this set up the hosted drivers as described above in section 6.
2) When created, find the hosted driver from the list of drivers and open that driver's options:



3) Select the "Free Charge?" option and this will enable hosted drivers to use public charging stations free of charge.

8 Reviewing charging sessions

As a host administrator (or with higher access rights), it is possible to review the charging sessions that have been performed on the stations associated with a host. These are accessible from the Charging Sessions tab

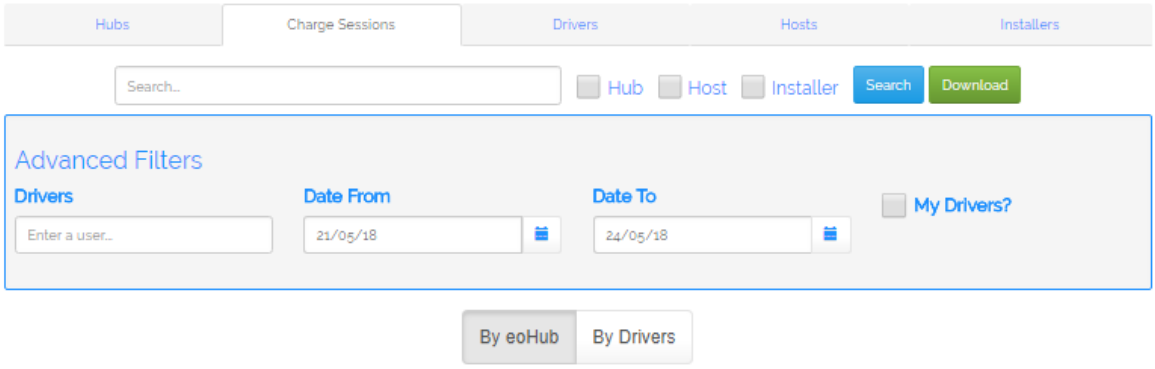


Figure 35 - Charging Sessions tab

It is possible to search for a particular host or hub or installer and then view the charging sessions for a selected period. The information available from a search is shown below:

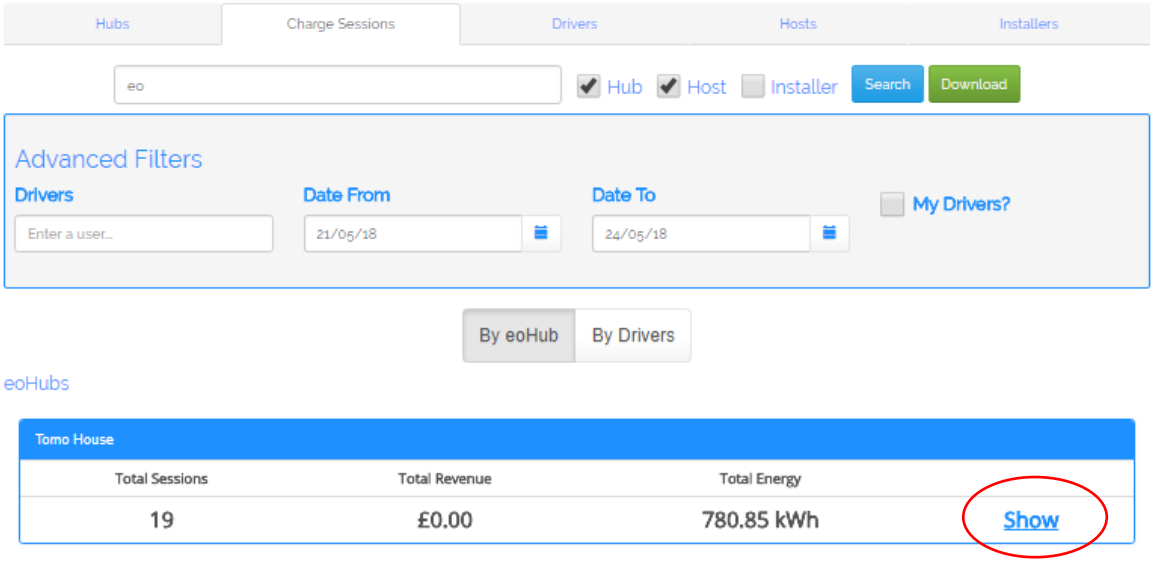
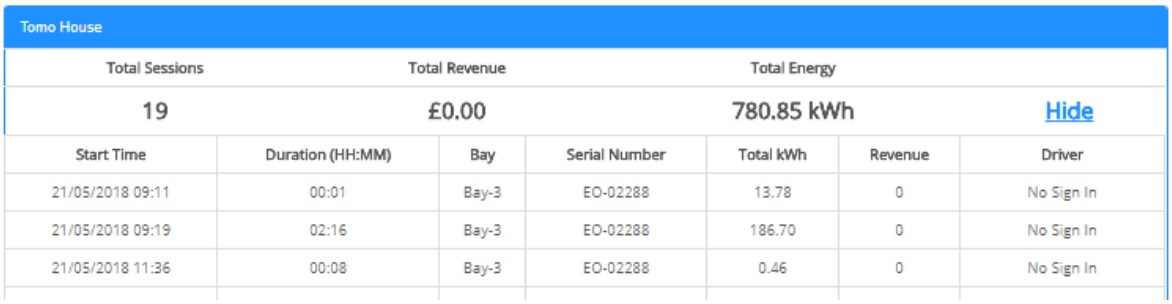


Figure 36 - Search options for charging sessions

If the Show option is selected (highlighted in Figure 36), then the following additional details are shown



Tomo House

Total Sessions	Total Revenue	Total Energy	
19	£0.00	780.85 kWh	Hide

Start Time	Duration (HH:MM)	Bay	Serial Number	Total kWh	Revenue	Driver
21/05/2018 09:11	00:01	Bay-3	EO-02288	13.78	0	No Sign In
21/05/2018 09:19	02:16	Bay-3	EO-02288	186.70	0	No Sign In
21/05/2018 11:36	00:08	Bay-3	EO-02288	0.46	0	No Sign In

Figure 37 - Additional driver session details

If a user has confirmed the charging session using the App, then the charging session is associated with that driver/user and the “Driver” column lists the name of the driver.

All of this information is possible to download into a CSV file.

9 Demo Users

It is possible to log onto the portal as a demo user. This would therefore allow the user to view ammonised data but allow the user to gain an overview and feel of the portal. The login details are as follows:

Username: demoHost@eocharging.com

Password: demo_HOST27?

Username: demoInst@eocharging.com

Password: demo_INST92-

Username: demoDist@eocharging.com

Password demo_DIST06)