



Chargefox Future Fuels

Metro Fast Charging

2022/FFF005

2022/FFF006

Project results and lessons learnt

Lead organisation: Chargefox

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Project Overview

Project summary

This Project received funding from ARENA as part of ARENA's Future Fuels Fund Program. The goal of this project is the development and construction of 16 metropolitan Electric Vehicle charging stations in Adelaide and Perth. Each site will have one 120kW DC EV charger, capable of charging two cars simultaneously.

Project scope

The objectives for the Project are:

- Development and construction of 16 EV charging sites in metropolitan locations

Outcomes

- Inspection of 16 candidate sites has been completed
- Draft designs have been created for 16 sites
- Draft construction costs have been submitted for two sites

Lessons Learnt

Lessons Learnt Report #1: Site Licence Agreement Process

Project Name: Chargefox Future Fuels Metro Fast Charging

Knowledge Category:	Commercial
Knowledge Type:	Property agreements
Technology Type:	Electrical Vehicles
State/Territory:	All of Australia

Key learning

Duration and resource requirements to secure EV Site Host Licence Agreements

Implications for future projects

There have been two major implications observed so far:

1. ***Protracted process to agree on T+C's of Site Licence***
2. ***Current Owner vs. Occupier of site***
3. ***Executive Level Strategic Direction for Electric Vehicles vs. Local Site Owner Needs***

Knowledge gap

- **Protracted process to agree on T+C's of Site Licence** – Expressions of Interest (EOI's) from property groups in the program's initial open request has provided a good starting point for potential sites and a conduit to alternate sites. However, our experience has shown that there are often large discrepancies between the Executive / Corporate level property group ideas on what site licence Terms and Conditions (T+C's) are important versus what the local site owners deem important. An example of this has been with negotiations with Vicinity Group which have rescinded on the original agreement due to T+C's that they didn't deem were in their best interest. Issues with amount of rent per parking bay being the most prominent problem. The root cause of this can potentially be aligned to the large increase in interest and competition in this space. 12 – 24 months ago, offering no rent or little rent for parking bays was reasonable but now with each site often entertaining multiple offers this becomes an issue to win sites. A countermeasure to this could be to raise the amount of rent being offered to sites or adjust the EOI's in the future to better reflect the current competitive landscape.
- **Current Owner vs. Occupier of site** – When attempting to establish where the EV charging site should reside, often there has been a protracted effort between site owners, their preferred electricians, Chargefox, and our selected contractors and electricians for site

inspections and build. Often there are multiple layers of requirements on the switchboards best suited for an EV charging site. Requirements from individual stores, property groups, site operators all need to be checked and agreed upon before moving ahead. With busy schedules and multiple parties this often requires segregated meetings with only a single stakeholder which draws out the process to coordinating a solution that works best for all parties. Often, in the case of Chargefox this has meant moving to different switchboards resulting in unfavourable and longer cable runs which are the single largest variable affecting site build costs. A countermeasure to this would be to screen for better alignment between property groups and local site owner/operators to ensure a smoother site acquisition process.

- **Executive Level Strategic Direction for Electric Vehicles vs. Local Site Owner Needs –** Different property group offer different levels of freedom to the individual site owner/operators on how they own and operate a site. Along with the different degrees of freedom between property group and local owners, comes different levels of communication on the property groups' broader strategic initiatives. Often what has occurred is that local owners/operators are interested but when they inform the property group executive levels they are told to stop because they need to check if it aligned with corporate strategy. When this check occurs there often no strategy or if there is one it is unknown who is responsible for it. An example of this occurred during negotiations with a large property group where it was unknown what the groups' strategic initiative was in the EV charging space and as a result there was a protracted attempt to identify who was responsible for executive strategy for EV charging and whether it was driven by local site owner or the property group executives. A countermeasure to this issue would again be a more thorough screening of the individual's site relationship to the umbrella property group to gauge alignment or independence from the umbrella group.

Background

Objectives or project requirements

Our proposal to the Future Fuels Fund required Chargefox to identify the sites we wanted to develop and build. We proceeded based on signed letters and assumed that these would lead to licence agreements once the sites were approved by ARENA.

Process undertaken

While writing the proposal for the Future Fuels Fund we met with our property partners to get pre-approval of sites, to reduce risk in later phases.

When developing a site, we would normally only sign a licence once the design is approved. The landlord wants to know what is going to be built before approving it so the design must proceed the licence. This meant that gaining a signed licence for the proposal stage was

infeasible, so we tried for a Letter of Intent instead. A non-binding letter that supports the intention of the program and promises to work on a design in future. These were lodged with ARENA as part of the proposal. Upon notification of success in this process we reconnected with the landlords and found that some had moved on.

Lessons Learnt Report #2: CHAdeMO vs. CCS2 plug ratios

Project Name: Chargefox Future Fuels Metro Fast Charging

Knowledge Category:	Logistical
Knowledge Type:	Project Management
Technology Type:	Electrical Vehicles
State/Territory:	All of Australia

Key learning

Appropriate CHAdeMO vs. CCS2 plug ratios for EV Charging Sites need to be re-assessed for future proofing.

Implications for future projects

Monitoring uptake of new EV's in Australia and their charging methodology to best provide charging sites that cater to the population.

Knowledge gap

Adoption rates of the CCS2 EV plug charging standard have increased while adopters of the CHAdeMO plug charging standard originally championed by Japanese car manufacturers (Nissan, Honda, Mitsubishi) have become laggards in the industry, offering only a handful fully EV models with inferior range and technology compared to American, Korean, and European brands.

Regarding the plug standard itself, the current CCS2 maximum charging specifications (150 – 250 kW) offer a massive advantage which provides futureproofing of the standard in relation to CHAdeMO with most models capable of 50 kW offer only a fraction of the charging speed.

As a result, new car purchases have slanted heavily in favour of CCS2 plug standard (Table) and now puts the ratio of CCS2 to CHAdeMO cars on the road to roughly 9 : 1. The Table below lists Australian new EV sales in 2021 shows that the top 10 cars sold by number that only two utilise CHAdeMO and of those two they comprise of less than 6% of sales.

Position	Model	Number	Plug Type
1	Tesla model 3	12094	CCS2
2	MG ZS	1388	CCS2
3	Mitsubishi Outlander	592	CHAdeMO
4	MG HS	580	CCS2
5	Porsche Taycan	531	CCS2
6	Hyundai Kona	505	CCS2
7	Volvo XC40	495	CCS2
8	Hyundai Ioniq	407	CCS2
9	Nissan Leaf	367	CHAdeMO
10	Mercedes-Benz EQA	367	CCS2

Total top 10	17326
Total in 2021	20665
top 10 cars represent of all sales in 2021	83.8%
approximate % CHAdeMO	5.9%

**Source energy matters.com.au*

Background

Objectives or project requirements

The objectives of the FFF fund program is to provide the community a base level of charging infrastructure to meet the demand of EV vehicle owners.

Process undertaken

The plug ratio was agreed upon in the project agreement as determined by ARENA.

Supporting information (optional)

N/A

Conclusions / Next Steps

Lessons Learnt #1 - Site Licences

- **Have a stronger commitment from property groups at the conclusion of the EOI phase.** Our experience has shown that the loose commitment from a letter of intent were not enough to keep most site owners engaged. What resulted was protracted negotiating of sites and more often having to locate new sites and new site owners to engage.
- **Better insight into alignment between umbrella property groups and individual sites.** Much of our negotiating time has been spent on talking to multiple parties then having to align their interests. An stronger agreement with a property group as above would benefit here as well.

Lessons Learnt #2 – Plug Ratios at Sites

- **Better insight to forecast what plug types will be predominant in the market in the coming years.** A forecast on what charging standards are being adopted by EV manufacturers so a more informed ratio can be agreed upon when EV charging sites are installed.
- **Purchasing of EV chargers capable of simple switching between plug types.** When purchasing a charger, having this as a requirement.
- **Provision of some budget for plug replacement.** Allocate a small portion of the budget to replacing plugs to be assessed in 3 – 5-year windows.