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Lessons Learnt Report – October 2022

Lead organisation:	Fast Cities Australia Pty Ltd (trading as Evie Networks)		
Project name:	Evie Networks Future Fuels Public Fast Charging		
Project commencement date:	August 2021	**Completion date:**	October 2023
Report date:	October 2022		
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This Project received funding from ARENA as part of ARENAs Future Fuels Fund Program. The views expressed herein are not necessarily the views of the Australian Government and the Australian Government does not accept responsibility for any information or advice contained herein.

Executive Summary

Evie Networks' Future Fuels Public Fast Charging program commenced in August 2021. Evie's first charging station under this program was launched in October 2021. As of October 2022 Evie has commissioned 28 out of a total of 158 fast charging stations, with many more in the pipeline to be built. In addition to the Future Fuels Fund program, Evie operates approximately 56 other fast charging stations located in metropolitan areas, on highways and in regional towns. Operating a diverse network has enabled Evie to garner insights about utilisation, performance and costs associated with operating charging infrastructure.

This report provides insights regarding utilisation on the network, as well as highlighting some of the ongoing challenges with deployment, as follows:

1. The proportion of CHAdeMO sessions is falling as the relative proportion of CHAdeMO vs CCS2 vehicles falls.
2. Ongoing high cost and extended timeframes for high power connections.
3. Public charging continues to align with solar peaks, suggesting a clear benefit for the future of distribution networks.

To demonstrate insights we use data from the wider Evie network.

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Project Status

Evie Networks' Metropolitan EV Fast Charging Infrastructure Network involves the development and construction of at least 158 fast EV charging sites located in Greater Sydney, Greater Melbourne, Greater Brisbane, Adelaide, Perth, Hobart and Darwin.

Evie's charging stations are designed to closely match the needs of drivers:

- Geographically spaced to provide complete coverage of metropolitan areas so that drivers are always close to a fast charge.
- Co-located with a diverse set of site hosts, including shopping centres, petrol and convenience, fast food and council sites.
- Supporting the full range of passenger and light commercial EVs, with both the CCS2 and CHAdeMO connectors prevalent in the market.
- Minimum 50kW DC fast charging technology enables meaningful range to be added with a turnaround time that matches natural driver behaviours.

As of October 2022, Evie has commissioned 28 fast charging sites as part of the ARENA Future Fuels Fund program, with many more in the process of being built.

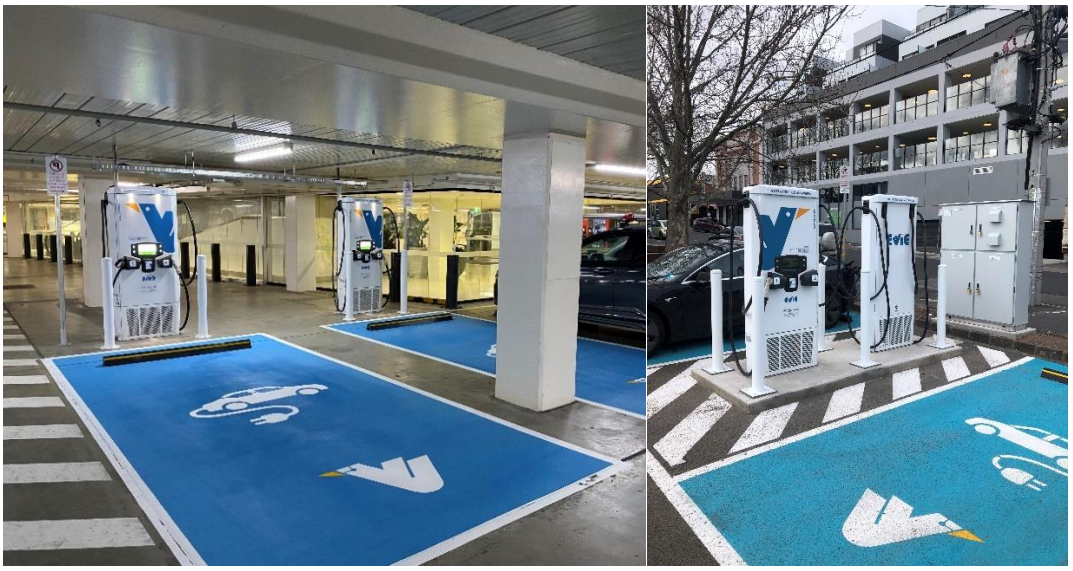

Figure 1: New Evie Networks charging sites launched at Belrose NSW (left) and Ascot Vale VIC (right)

Lesson Learnt #1: CHAdeMO usage has grown, but CCS2 is accounting for a significantly greater proportion of charging

Category:	Commercial

Evie has been operating charging stations since 2019. Over this time we have observed a significant change in the relative proportion of charging by plug type. While both CCS2 and CHAdeMO usage has grown across the network, the growth of CCS2 has been significantly greater than CHAdeMO.

As shown in the charts below, over the last six months we can see that CHAdeMO usage grew by less than 10% between March and September whereas CCS2 usage grew by nearly 50%.

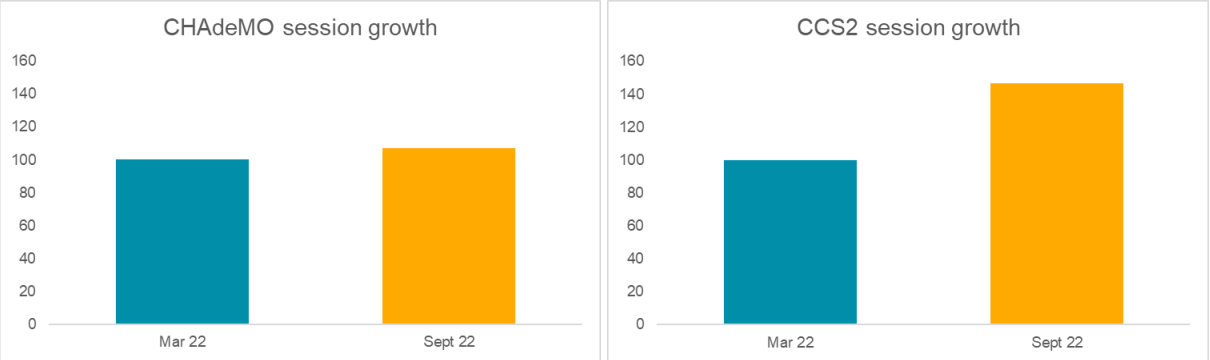

Figure 2: Relative growth of CHAdeMO and CCS2.

The difference in growth between CHAdeMO and CCS2 can be explained by the volume of cars being sold over the period. Vehicles that have CCS2 ports accounted for the vast majority of sales over the period and we expect this trend to continue for the foreseeable future. Vehicle sales growth is shown in the next section.

Lesson Learnt #2: High power connections processes remain costly and have long lead times

Category:	Commercial

The current arrangements with DNSPs for power connections are expensive and inefficient. Currently there are minimal obligations under the National Electricity Rules requiring a Network Service Provider to respond to grid connection applications in a timely manner. The power connection process can take more than 6 -8 months from initial inquiry to receive the necessary information to inform technical feasibility and commercial viability of building infrastructure at the location. These delays not only adversely impact the rollout of the chargers, but are also very costly. An application could cost up to $30,000 depending on level of assessment work required. Additionally upfront expenditure on augmentation of a site once design standards and requirements from the DNSP are received can total up to $500,000 for high power connections.

While these issues can be attributed to the complexity of the task, there remains scope for DSNPs to better align connection requirements and provide more consistency and transparency in approval responses and timeframes. Evie will continue to work closely with DNSPs in a collaborative manner to streamline connection processes, noting that there is a lack of nationally consistent standards for power connections.

Lesson Learnt #3: Public fast EV charging can benefit networks, but networks continue to promote barriers to public charging.

Category:	Commercial / Regulatory

Public fast EV charging can help networks improve utilisation and defray costs, which will provide significant benefits for networks as EV uptake grows. Two of the attributes of public EV charging that will support networks are:

- Public fast charging aligns with solar peak generation. Evie has consistently observed that the peak times for public EV charging occurs in the middle of the day, in line with solar peak generation.

- Public fast charging equipment is highly controllable. Evie has demonstrated that charging equipment is highly controllable and can respond to signals dynamically, such as peak network events.

Figure 3 below illustrates the peak times for public fast EV charging as observed on Evie's network.

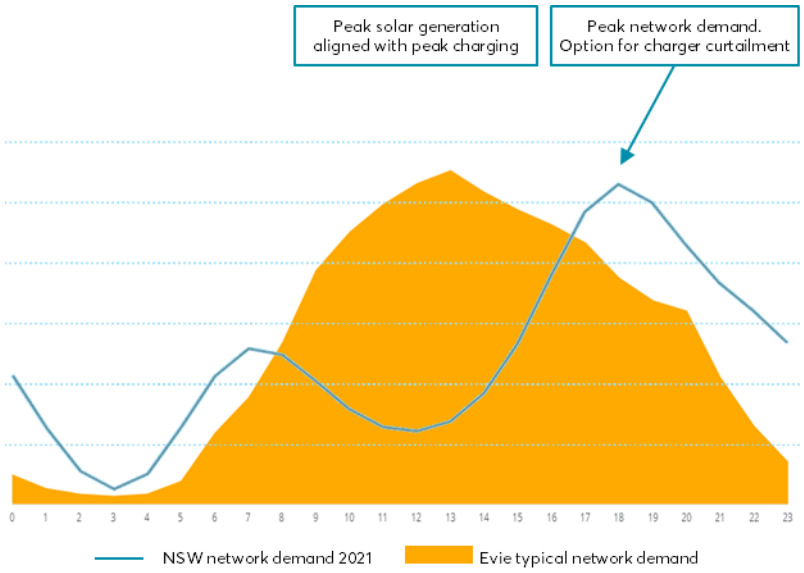

Figure 3: Public fast EV charging relative utilisation by time.

Networks are currently faced with high costs to manage peak solar events. It is clear that public fast EV charging can act as a "solar soak". As EV uptake grows and public charging scale becomes significant, this should generate tangible benefits for networks.

"Solar soak", dynamic control and the future potential of Vehicle to Grid technology will be a source of efficiency, savings and stability for networks. Unfortunately many DNSPs are not considering the benefits from public EV charging today and instead are promoting barriers to EV uptake. For example, in Ausgrid's recent draft plan for 2024-2029, Ausgrid acknowledges the barriers that its tariff structures and processes create but does not address the barriers in a way that will provide any tangible benefit. Ausgrid proposes to raise their capacity charge thresholds (that apply earlier than all other DNSPs) progressively between FY25 and FY27. Not only will the new thresholds still result in earlier capacity charges than a large majority of other DNSPs, but Evie forecasts that this transition will trail market demand, thereby ensuring that Ausgrid tariffs remain the highest in Australia during the important early growth years of EV uptake.

The key learning from this assessment is that public fast EV charging has considerable potential to benefit networks and hence all consumers, but without effective actions from networks and/or regulatory support, significant barriers to investment will remain in the areas covered by those networks.

The most effective, long term solution would be for industry and DNSPs to work in a collaborative way to explore the mutual benefits that will arise from the electrification of transport. We would encourage more industry participants to engage via industry groups such as the Electric Vehicle Council to help raise the profile of this important issue, so that tariff and technology discussions can deliver genuine benefits for all consumers.