The Electric Vehicle Council (EVC) is the national body representing the electric vehicle industry in Australia. We represent members involved in providing, powering, and supporting electric vehicles, and strive to accelerate the electrification of road transport for a more sustainable and prosperous Australia.

This submission has been prepared by the Electric Vehicle Council in consultation with and approved by Evie Networks, Tesla and Chargefox.

Thank you for the opportunity to comment on the Victorian regulatory proposals for 2021-26. This reset provides an important opportunity to address existing elements of tariff structures which are impacting on the operation of public electric vehicle charging sites. However, the revised proposals do not outline any path forward to address these elements.

Energy costs are adversely affecting the operation of public charging infrastructure in Australia. The main driver behind these energy costs is the network tariff component. There is already some evidence to demonstrate that fast public chargers represent a unique type of load, but there remains a lack of understanding about the true cost which public chargers impose on the network and the corresponding price that they should be charged.

Public charging in Australia

There are three types of public charging categories:

- **AC Chargers –** relatively cheap to install, operate and maintain but offer a slower charge and are therefore suitable for non-time critical or short-range travel. Typically installed in homes and businesses in local areas and predicted to grow organically with EV uptake.
- **DC Fast Chargers –** more expensive and more complicated to install, operate and maintain. Power ranges from 50 to 150kW, enabling charging in a matter of hours. The installed cost of DC Fast Chargers is in the tens of thousands, well within the budget of a business seeking to attract customers. Such chargers typically support destination charging, i.e. hotels, supermarkets, small towns; as well as basement charging in multi-family residences.
- **Ultrafast Chargers** range from 350kW and upwards enabling charging in tens of minutes, fast enough for highway charging of commercial fleets. The installed cost of a charging station is in the millions of dollars depending on the number of charging heads and cost of augmenting the electricity network. Therefore, these chargers are most likely to be deployed by specialist asset owners, highway rest stops or commercial fleet operators. Ultrafast chargers have much higher power draw, typically connected at 11,000 kV level of the electricity network and must be carefully planned to integrate into the existing electricity systems. Ultrafast chargers are an essential requirement for highway driving, which equates to greater than 15% of total travel (Australian Bureau of Statistics, 2017).

There are now over 350 DC fast and ultra-fast charging stations (50kW and over) at over 150 locations across Australia. This represents a 42% increase in the number of fast charging stations since July 2019.[1]

[1] Electric Vehicle Council (2020) *State of Electric Vehicles 2020*

Importance of public charging to consumers

Public charging infrastructure is needed along major highways, in urban centres and at popular destinations. While most charging tends to occur at home, for Australians without off-street parking, home charging can sometimes be inconvenient or impossible. Public charging infrastructure is therefore not only a matter of convenience but often critical to supporting EV uptake.

Public charging infrastructure also helps to address consumer concerns about running out of power, a concern known as "range anxiety". In a recent EVC consumer survey, more than half of respondents (52%) cited insufficient access to charging equipment as a factor discouraging them from buying an electric vehicle.[2] In a global McKinsey survey from 2016, consumers ranked insufficient access to charging stations as the third most serious barrier to buying an electric vehicle, behind price and driving range.[3]

The EVC survey further confirmed the vital importance of fast public charging, with 82% of surveyed consumers rating fast public charging infrastructure as either important or very important. In addition, when asked about government policies to encourage electric vehicle adoption, over two-thirds of consumers saw the provision of public charging as a priority.[4]

Public charging load

Public charging operators are rolling out DC fast charging sites with equipment ranging from 50-350 kW at a range of locations across Australia including shopping centres, public destinations (often installed behind the meter), and highways in both metropolitan and regional areas. Often multiple charging stations are installed on the one site.

The energy consumption and maximum demand varies between sites due to usage levels and number of chargers installed.

Current usage of these chargers can be low, particularly at regional or outer-metro locations, due to overall low EV uptake. This means that chargers have a generally low level of energy consumption, more akin to a small business' energy consumption.

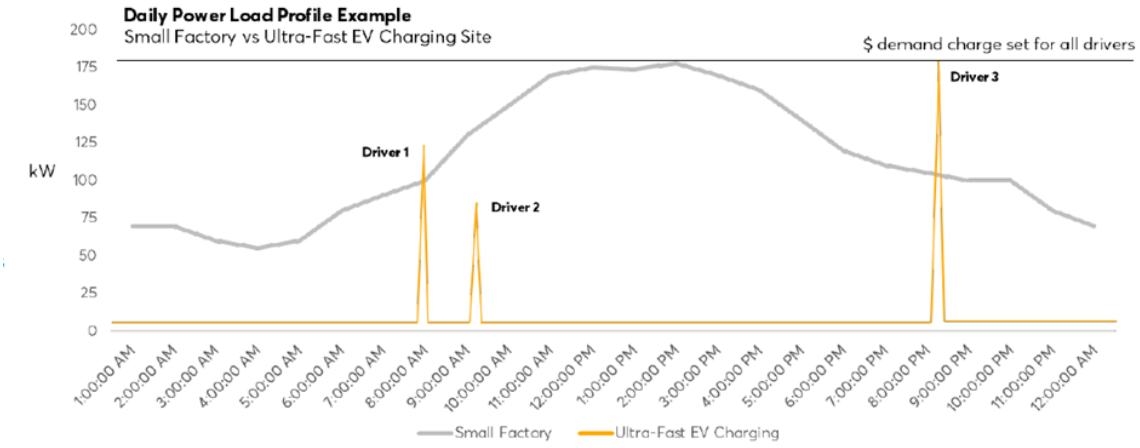
Usage is expected to grow significantly over the next decade as EV uptake grows. However, some sites may not see high utilisation at regional locations.

Despite low usage, chargers can draw significant amounts of power for short periods of time due to the operation of one or more 50-350 kW DC chargers. A sample daily energy load profile is provided below to illustrate and compare the load of an EV charger with a small factory:

[2] Electric Vehicle Council (2020) *State of Electric Vehicles 2020*

[3] https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/charging-ahead-electric-vehicle-infrastructure-demand

[4] Electric Vehicle Council (2020) *State of Electric Vehicles 2020*



The time of use also varies between locations. For example, a charger in an urban shopping centre might often be used during network peak periods (e.g. weekday, 2pm-8pm) while a charger on a regional highway might be more likely to be used outside of network peaks (e.g. weekend).

More long-term data is required to understand actual EV load, including times of maximum demand, to better understand the cost that EV charging imposes on the electricity network. This is important to understand what an appropriate cost reflective network tariff for an EV public charging load is.

Tariff assignment

The customer tariff assignment of public charging sites varies between different DNSPs. This is because the consumption (MWh pa) thresholds for classification as a large business customer are different across DNSPs (ranging from 40-400 MWh pa).

Some DNSPs also include a maximum demand threshold, measured by power (kVA) or capacity (kW). Because the maximum demand used at some public charging sites exceeds 120-150 kVA, these sites are classified by these DNSPs as large business customers, despite being significantly below the consumption threshold.

Many charging sites are assigned to large business customers tariffs by the following DNSPs:

- Ausgrid - due to consumption threshold; and
- Citipower/Powercor, Jemena, United and SAPN – due to maximum demand thresholds.

State	DNSP	Consumption (MWh p.a.)	Maximum demand
QLD	Energex	100	---
	Ergon	100	---
NSW	Ausgrid	40	---
	Endeavour	160	---
	Essential	160	---
VIC	AusNet	160	---
	Citipower/Powercor	160	120kW (capacity)
	Jemena	400	120kVA (demand)
	United	400	150kVA (demand)
SA	SAPN	160	120kVA (demand) [#1]
TAS	TasNetworks	none	
ACT	Evoenergy	none	

Impact of large business tariffs on public charging

The impact of large business tariffs on public charging will depend on the site configuration. Most large business tariffs include the following components:

- Standing charges – fixed service charge (c/day)
- Consumption charge – calculated off actual energy consumed (c/Kwh)
- Demand/capacity charge – calculated off the maximum amount of energy demanded over a point in time (c/kW/day)

Each component is charged at a different rate depending on exact tariff class and DNSP.

Demand tariff components are having the biggest cost impost on public charging operators where the site has relatively high maximum demand and corresponding high demand charges.

However, not all public charging sites will be equally affected by existing tariff structures. The impact of the existing tariff structures will depend on:

- Number and type of chargers at site – 50 kW, 120 kW or 350 kW
- Existing and forecast utilisation
- Time of use
- Location of charger:
    - Metro vs regional
    - Behind the meter vs front of the meter
- DNSP customer assignment thresholds
- DNSP tariff rates

Further data needs to be captured to assess which site features are more affected by existing tariff structures and whether this represents an appropriate cost.

A diverse range of public charging sites is required to meet the needs of EV drivers, which will be a significant segment of Australian households by 2030. The energy system needs to ensure it does not unduly remove choice from consumers by imposing high costs on certain public EV charging configurations, particularly given such configurations are being rolled out globally.

Issues with large business tariffs that warrant further investigation

The experience of public charging operators has identified two main issues that need to be addressed:

- *Thresholds for customer assignment to large business tariffs:*

In Citipower/Powercor, Jemena and United regions, fast public charging sites are automatically classified as large business customers because they reach the maximum demand threshold despite being significantly below the consumption threshold.

There is sufficient evidence to question whether those public charging sites, particularly those that have maximum demand outside of network peaks, should be assigned onto these tariffs. Applying large business tariffs to charging sites that have inframarginal demand – and therefore do not trigger investment in additional network capacity – results in excessive charges.

Differences between DNSPs is to be somewhat expected, however, the outcome of these significantly misaligned thresholds means that in certain regions, public EV charging incurs significantly greater energy costs. While these differences are not new, the impact of the traditional approach is having an impact on an emerging new customer profile and therefore should be reconsidered.

Failure to align customer classes will lead to inequitable outcomes for energy consumers (in this case, EV drivers) as some would need to pay much higher costs to charge their car than consumers in other regions. Public charging also provides a vital service for drivers without access to home charging.

- *Cost reflectivity of large business tariffs for public EV charging*

The network load of some public EV charging site has characteristics which are unique to most other customers: high maximum demand, but low overall consumption. As outlined above, there is already evidence that maximum demand peaks at several charging sites does/will occur outside of times of network peaks and therefore does not trigger additional grid investment.

In addition, while networks need to recover costs for building to meet maximum demand, most public charging sites already pay for network capacity upgrade costs at time of connection. This means that public charging operators are faced with high connection costs and demand/capacity charges, despite demanding a relatively low amount of energy.[5] While the amount of energy demanded is expected to increase over time, this problem is expected to remain if the existing tariff structure remains.

Given the unique load and the costs paid at connections, as well as the impact it is having on public charging operator, there is a strong argument to review the existing tariff structures to assess whether they are cost reflective for this type of load. Maintaining the traditional approach to a new technology does not serve the public charging industry and may not serve DNSPs.

[5] AusNet currently includes a capacity charge that requires customers to pay to access transformer capacity. In instances where the public charging operator paid the costs to add this transformer into the network, they still incur a capacity charge to access the transformer they paid for.

EVC Recommendations

The revised proposals have not adequately responded to the issues being raised by the industry. They do not propose any changes to tariffs or tariff assignments to address these impacts, nor is there any further clarity for the industry on a path forward.

The EVC recommends:

1. *Remove C&I customer assignment for EV charging in this reset*

The current Victorian reset process provides an opportunity to adjust customer tariff assignment policies so that loads akin to a public EV charging load are not automatically assigned onto a large business tariff. Action is needed now because the impacts of inappropriate tariff structures are felt most acutely at low levels of utilisation.

A more appropriate tariff structure for public EV charging would:

- Provide optionality to customers - allowing consumers to select either a volumetric time-of-use tariff or a demand charge tariff; ultra-fast charging sites currently only have the option of demand charges.
- Have low fixed charge components – current C&I tariffs have high fixed charges which are incurred at very low levels of utilisation and are therefore hard to recover.

Providing customers with the certainty that they can access tariff optionality is also critical to provide confidence to the public charging industry. Optionality around tariffs should not be subject to negotiations with individual DNSPs.

This approach should be viewed as a short-term solution until a more comprehensive solution is agreed for implementation in the next regulatory control period (or earlier if possible).

2. *Undertake data capture and tariff analysis to inform next regulatory reviews*

A more flexible and innovative approach is needed to determine the most appropriate structure going forward for public charging operators, EV drivers, energy consumers and DNSPs. Now is the time to consider and trial a revised approach prior to EV uptake becoming more widespread.

The EV industry is still a new industry, charging behaviours are still emerging, and there are still few public charging operators in the market. A better understanding is needed of EV charging load, as well as how this load incurs costs onto network operators, and what impact different levels of utilisation will have on loads/costs before a long-term tariff is locked in.

Therefore, DNSPs and public charging operators should also work together to gather more load data and test the cost reflectivity of existing and alternative innovative tariff structures to implement in the coming years.

Some DNSPs have expressed in their proposals a willingness to conduct trials for public EV charging. The EVC is supportive of trials however when trials were proposed in the DEIP High Capacity Tariffs and Connections Taskforce, it became clear that further data and analysis was needed in order to design a trial.

This is why the EVC is proposing that DNSPs and the public charging industry first undertake a period of data capture and analysis, with involvement from the Victorian Government. The Taskforce did not prove to be an appropriate channel to conduct this work due to the differences between different DNSPs, the different stages of regulatory periods, and limited engagement and appetite for this work from several DNSPs.

Conclusion

The AER's final determination must not only acknowledge the concerns of the public charging industry, but also provide a clear response about how the DNSPs and AER are addressing these concerns both in the short term and in the longer term.

The public charging industry is a new customer group which is requesting an innovative approach to tariffs to address this type of load profile, which is currently being significantly impacted by the current approach to tariffs and tariff assignment.

The energy sector should be partnering with the industry to determine what is the tariff solution, if the energy sector is serious about supporting and facilitating the uptake of EVs in Australia, especially given the opportunities that higher EV uptake offers the energy system.

The development of this solution may take some time, given the new and developing nature of this industry, therefore it is imperative to also provide a short-term response now – removing C&I customer assignment – to minimise the impact of C&I tariffs are having now on this fledgling industry.