EVC response to:

August 2023

With reference to:

https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/network-visibility

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Preamble:

The Electric Vehicle Council (EVC), Australia's national representative body for the EV industry, appreciates the opportunity to provide feedback on the AER's consultation paper in response to the work on network visibility undertaken by the ESB.

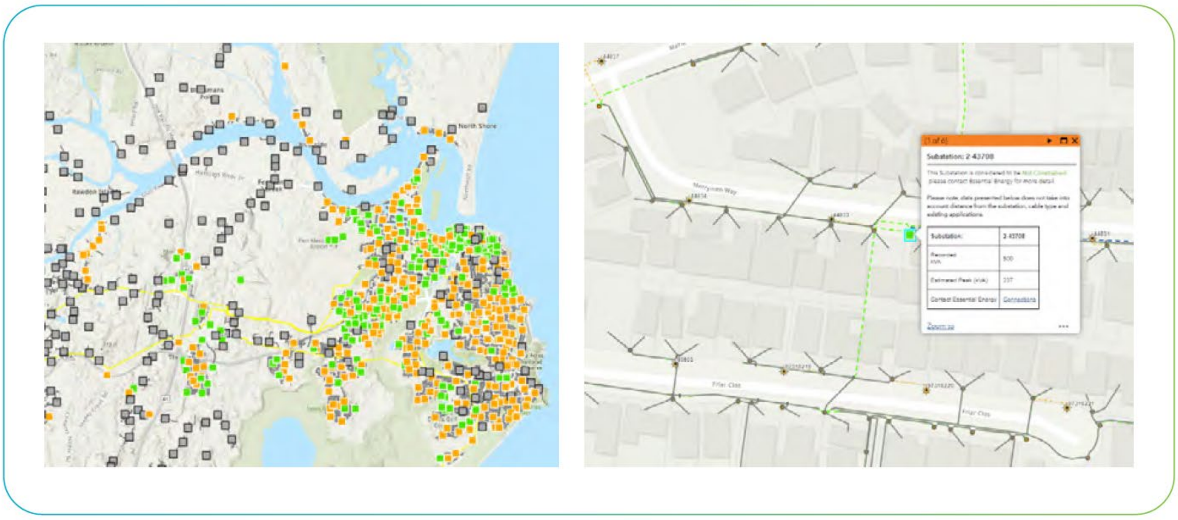
The EVC was one of the organisations involved in the use case development work undertaken by Oakley Greenwood and would be pleased to be involved in this work as it progresses.

Executive summary of EVC position:

The uptake of electric vehicles is going to require the deployment of public charging infrastructure. In areas where public charging infrastructure fails to keep pace with demand, the transition to EV will predictably be slowed, which will compromise the pursuit of net zero targets at a state and federal level - these targets being contingent on the reduction in use of petrol and diesel. In addition, as EV uptake increases, drivers who have already made the switch to EV will suffer negative outcomes (ie, lack of availability of public charging equipment at some places and times) if infrastructure deployment fails to keep up.

Improving visibility of network capacity information offers a multitude of benefits for the planning and deployment of charging infrastructure. It can save substantial time for organisations planning deployments, make it easier for infrastructure planners and electricity utilities to do business, and allow the industry to collectively shape the future of an electrified transport system.

Essential Energy has released a great tool that provides insights into the estimated capacity on their low voltage network. Given many variables determine if a network has capacity for electric vehicle load, the tool doesn't replace a formal connection application process. However, it does allow organisations such as charging point operators (CPOs) to rapidly assess a geographic area against their equipment deployment plans. For Essential Energy, this potentially reduces the number of individual applications needed for a business planning multiple EV infrastructure sites, with a higher probability that the selected sites will be fit-for purpose. It's not just a process and efficiency improvement for the applicant, which facilitates faster and lower cost EV charging equipment deployment - it is also a process and efficiency improvement mechanism for the DNSP, because it reduces the number of received connection applications that require processing, but which are unlikely to progress to connection.



Source: **Essential Energy.**

This is currently the gold standard in Australia demonstrating the potential of sharing existing network data to support public EV charging equipment deployment in an accessible way. We note specifically that this has been achieved in an environment without ubiquitous smart meter deployment, and without extensive existing instrumentation of distribution substations (ie, pole and pad mounted transformers). We'd like to see something similar in all jurisdictions, and for it to extend upwards to feeder capacity data.

Specific commentary

Question for stakeholders

1. Is the set of use cases in Appendix 6.4 representative of the use cases that you are aware of?
2. What additional use cases should be added?

Appendix 6.4 identifies a couple of items specifically related to EV charging:

11	Investors in EV charging for any location • Normal/street charging • Fast charging	Seeking connection information, including locations and tariffs Forecasts and costs for augmentation
13	Investors with sites looking to add EV charging	NMI/Site information, forecasts and load hosting capability and costs

One of the key data gaps that will be useful to parties deploying high power EV charging equipment, that is potentially answerable data held by the DNSPs, is the available capacity at locations within a geographic area, at a level sufficiently granular to be useful.

Zone substation capacity, which is required to be made available already, is not particularly useful in this regard. A party looking for a 500kVA supply within a regional township doesn't need to know if there is 5MVA of capacity at the zone sub serving that town, they need to know if there is 500kVA of capacity on the feeder in the location they are considering.

Feeder capacity information is more granular, and hence more useful, than zone substation information.

A party looking to deploy 2 x 50kW EV chargers will be trying to avoid the requirement to invest in the upgrade of a transformer. What they're looking for is an existing distribution substation (ie, pole or pad mount transformer) in the 350-500kVA range, with at least 100kVA of spare capacity.

Transformer capacity information is more granular, and hence more useful, than feeder capacity information.

It is this transformer capacity information that the Essential Energy portal reference in the executive summary provides, in an easy-to-use interface.

In other regions, some work in this direction has been done, which goes beyond the minimum requirements called for in the DAPR arrangements – for example:

SAPN have a portal with feeder-level information, that went live earlier this year:
https://www.sapowernetworks.com.au/data/315234/new-network-visualisation-portal-launched/

Ergon and Energex publish transformer monitoring data:

https://www.energex.com.au/about-us/company-information/our-network/data-to-share/transformer-monitoring-data

https://www.ergon.com.au/network/help-and-support/about-us/who-we-are/data-to-share/transformer-monitoring-data

We note that not all jurisdictions will be equal with respect to the degree to which this data already exists. In Victoria, for example, ubiquitous smart meter deployment should enable the publication of accurate transformer level capacity data to be relatively straightforward. The roll-up of smart meter interval data that is already being captured by the DNSPs to the transformer level, and the presentation of this data in an interface similar to the Essential Energy one, would suffice.

In other jurisdictions, such as Queensland, where substantial rollout of transformer monitoring has already been undertaken, there is a similar clear pathway to the creation of a suitable data sharing tool with a useful interface, as opposed to the ability to download data sets without the easy-to-use geo-spatial aspect.

We note that Essential Energy has produced their tool without having ubiquitous smart meters, or ubiquitous transformer monitoring. Lack of existing deployment of these technologies is not a valid excuse for inaction on this data visibility work. Presence of these technologies will make useful action significantly lower cost to execute, and will make the data published more accurate.

The other key element currently delaying deployment of EV charging equipment, which is not readily addressable with data, but which can only be addressed by the DNSPs, is connection approvals. Timelines for connection approvals will be shortened by the efficiencies gained through improvement in visibility, but this alone may not be enough. Consideration will need to be given to the means by which DNSPs can arrange for faster turnaround of connection applications. Essential Energy are leading the way on this, with focused resources in place to support the transition of the vehicle fleet to electric.

DNSPs will also need to review their positions with respect to approving second lines of supply, particularly in cases where a business premises has an open-air car park adjacent, with powerlines running past it, and a desire to deploy DC fast charging in that car park.

In Victoria, for example, the electrical safety regulations and the electrical safety regulator (ESV) are supportive of second lines of supply to enable cost effective deployment of EV charging, but some DNSPs are opposed. The DNSP approach in these cases is to push the applicant to modify the existing site switchboard, and trench through the car park to the proposed EV charging location, which is typically far more costly and disruptive than a new connection to the network would be. Queensland DNSPs have a similarly restrictive approach, covered in the current draft QECM. SAPN and Endeavour are examples of DNSPs who address this aspect well.

Questions for stakeholders

3. Are there other sources of data that should be considered?
4. Do you agree with the framing parameters that were used? If not, why, and what should have been included or left out?
5. Are the data sets that have been identified and prioritised the correct ones? Are there others that are needed? Are any of the ones listed NOT needed?
6. Do you agree with the conclusions reached regarding the need for real-time data?
7. Are there more issues that should be considered regarding the balance between customer protection and reasonable data collection?
8. Is there any other feedback on the data set definitions?

With respect to enablement of the type of interface already developed by Essential Energy, key sources of data will be:

- Aggregation of smart meter data, rolled up to the distribution substation (transformer) level.
- Direct monitoring of the transformers, which may involve the deployment of suitable instrumentation.

At a lower level of granularity, direct monitoring of the feeders from the zone substations will also play a part, especially for new EV charging site connections at a scale where a new transformer will likely be needed (eg, 300kVA+).

From a project cost management point of view, for the purpose of supporting public DC charging installations, it would not be necessary to instrument every transformer. 20kVA transformers on SWER lines are not of interest in this context. Were the first phase of the instrumentation to focus purely on transformers 300kVA and above (on the basis that these are the ones more likely to have 100kVA of capacity), that would have significant utility to the EV transition.

It would be appropriate for the AER to model the cost of transformer instrumentation based on the execution of this type of work by the DNSPs to date, considering a variety of threshold, and to compare this cost to the consumer savings enabled by the transition to EVs.

We would strongly encourage the AER to engage closely with Essential Energy on this matter, as they have delivered the practical example of how it can be done, on a minimal budget, and without significant deployment of new assets in-field.

Customer privacy should not enter into this matter. If it is a network owned asset (feeder or transformer), available for more than one customer to connect to, then the data should be public. If the transformer is privately owned (for example, by an HV customer), then the transformer data need not be public – but the data for the feeder supporting it, to which another customer (LV or HV) might connect, should be.

For the purposes of planning and accelerating the roll out of high power public charging, real-time data is less relevant than historic interval data. It can be expected that there will be a variety of use cases where real-time data may by highly relevant – for example, it's easily conceivable that the status of a specific transformer could be used to encourage specific individuals to participate with their DER/CER in real time in a useful way.

We note from page 30 of the consultation paper, the improvement options associated with Import capability at a site:

***Improvement options*:**

- Ability to map user NMI and/or address to DxSub and/or HVFeeder.
- Traffic light presentation of remaining capacity

User NMI would be very useful in some cases (such as established locations considering EV charging installation), but the NMI will not exist in all cases at the time of consideration by the charging network operator. They may be intending to create a new connection, with the specific location selected dependent on capacity.

We would strongly encourage the traffic-light-on-a-map interface as demonstrated by Essential Energy. It works for the parties likely to be using the data for the ultimate benefit of consumers and is readily implementable.

If the data provision is limited to underlying data in machine readable form, then the data published should be sufficient to enable the creation of the traffic-light-on-a-map interface that will be accessible to the users. With this in mind:

- For distribution substation (pole and pad mount transformers), the data should include, at minimum:
    - a unique identifier of the asset,
    - the unique identifier of the feeder serving the asset,
    - the latitude and longitude of the asset at sufficient accuracy to locate the asset to a street address.
    - The nameplate rating of the asset
    - The historical peak import and peak export levels of the asset.
- For HV feeders, given they do not occupy a point location but rather can run for many kilometres, in addition to the data relating to capacity and headroom, a data format will be needed that enables a map of the feeders to be created. This could potentially be a series of sequential lat/long co-ordinates at a sufficient level of accuracy.

Questions for stakeholders

9. Do you agree with the criteria?
10. Do you see value in these data sets being made readily available to the public?
11. Is any important data missing?

The preamble to these questions speaks to cost and focusses on the goal of cost reduction:

"The cost of providing the data is an important factor. As noted above, in Phase 1 we have emphasised the use of data that DNSPs have or develop as part of their continuing efforts to enhance their visibility and operation of the LV network. This should reduce the cost of collecting data to address stakeholders' information needs to very close to zero.

Other costs may be incurred for collating, analysing, presenting and hosting the data, including the development of formats to allow easy access to the data. These will be explored in Phases 2 and 3."

We would note that over the coming decades:

- $20 billion in new transmission infrastructure is planned through the 're-wiring the nation' program.
- Many, many billions more will be spent building new solar farms, wind farms, and pumped hydro as part of the ISP out to 2050.
- $50 billion in annual petrol and diesel expenditure will migrate to expenditure on electricity - likely on the order of $20 billion / annum, with consumer savings on the order of $30B/annum. This $20B/annum in new spending on electrical energy for transport will pay for much of the above.
- $50 billion in new internal combustion engine vehicle sales will migrate to electric vehicles.

Against these many hundreds of billions of dollars associated with the transition of the road transport fleet to electric, we are looking at the costs of making data available that will be a key enabler of the transition. Much of this data already exists, but in some cases collecting it and presenting it will not be without cost. It is not necessary that these costs be brought down to zero, because ***absent*** the expenditure that delivers the data:

- the transition to EVs may be delayed (costing consumers money, impacting progress towards our net zero goals, and impacting health of our community)
- the cost of deployment of charging stations will be higher than necessary, with these costs ultimately being passed through to consumers.
- connection approvals processes for high power charging stations will remain inefficient, impacting not just the EV sector and the consumers depending on charging stations, but also everyone else attempting to secure a network connection.

If it becomes clear that transformer instrumentation, or additional zone substation instrumentation, is a necessary precondition to providing the data in a useful format, then the DNSP should be able to (in fact, could reasonably be required to) spend the money, and the costs associated should be recoverable by the DNSP via the usual mechanisms, with the approval of the regulator. The apparent bias in this work towards achieving the data outcome at near-zero cost is misplaced. Doing this well will cost some money. That's acceptable, because the outcome will be worth it, and the alternative is significantly worse for consumers.

Note to table 1:

Table 1 has a note referencing update frequency, and notes that an annual update is sufficient, with the suggestion that reporting frequency increase to 6 monthly under certain conditions.

We would suggest that this be sensitivity tested in the coming phases of this work, to quantify the cost/benefit of increasing the update frequency.

For example, in Victoria, the presence of ubiquitous smart meters means that the raw data underpinning the use case we outline above is readily available in near-real-time. Any location operating transformer monitoring equipment would be similar.

It should not cost significantly more to update this monthly or quarterly, compared to annually. A monthly or quarterly update would significantly increase confidence in the data, and reduce the degree to which a project proponent is operating on out-dated data.