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Customers at the centre

TREA submission to the Open Energy Networks Consultation

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TREA congratulates AEMO and ENA on taking a proactive approach to the challenges of integrating distributed energy resources into the electricity network and is grateful for the opportunity to provide input.

As the paper notes, and as has been spelt out in some detail in the ENA/CSIRO Network Transformation Roadmap, the nature of the electricity network is changing from one of large centralised generators to a more complex mix of central and distributed resources.

Customers at the centre

Our major concern with the approach taken in the Consultation Paper is that it does not take sufficient account of the social factors that lead customers to invest in distributed energy resources (DER). Nor does it sufficiently address the processes by which new technology is developed and adopted.

While the economic and engineering factors addressed in the Consultation Paper are essential to planning for effective integration of DER into the grid, they are not sufficient.

The reasons why households and businesses invest in new technology are complex and vary considerably between individual consumers and between residential and business applications. A strong factor in the residential market is the desire to achieve a degree of control, driven in no small part by a mistrust of governments and large utilities.

This lack of confidence is strongly evident in the most recent consumer sentiment survey by Energy Consumers Australia (ECA 2018). It found that:

> *" … consumers believe they get worse value for money from their electricity provider than any other services including banks, insurance companies and mobile phones and are taking matters into their own hands.*
>
> *Only 21% of consumers nationally say they have confidence the market is working in their interests."*

As summarised by Rosemary Sinclair, CEO Energy Consumers Australia

> *"Consumers are reaching for control and choice, but have little confidence the market can deliver, so they are taking matters into their own hands."*

This desire for control has been a significant factor in the take-up of domestic PV even for grid-connected PV where it could be argued that consumers are still heavily dependent on the grid, even if they are generating some of their own electricity. The combination of solar PV, domestic batteries and two way use of electric vehicle (EV) batteries raise the possibility of much greater levels of autonomy. Consumers with sufficient

capital to invest have a realistic prospect of being either completely off-grid or with only a thin connection to the grid.

> *"Our proprietary model suggests a payback time as low as 6-8 years for a combined EV + solar + battery investment by 2020 – unsubsidised."*
>
> *"Large-scale power generation, however, will be the dinosaur of the future energy system: Too big, too inflexible, not even relevant for backup power in the long run." {UBS 2014, p1}*

The mistrust of central structures and the increasing possibilities arising from new technology fundamentally shift the power balance and give consumers a much greater role in deciding the future of the electricity system. Centralised control of customer owner distributed energy resources will be neither practical nor acceptable. Proposal for orchestration of DER needs to recognise this reality and offer customers (and aggregators chosen by them) genuine control over how their resources are used.

The importance of electric vehicles

The importance of electric vehicles is largely ignored in the Consultation Paper with only one explicit mention, and this only in the context of EVs as a load rather than a source of network connected storage.

> *"One benefit of a transition which is consistently underestimated is the role that EVs could play in supporting a smarter, more versatile electricity grid. Next generation EVs will typically have 40-60 kWh of storage, around four times the capacity of the Tesla Powerwall 2 currently being installed in conjunction with solar PV. If most of the 18m vehicles in Australia were electric this would equate to 900 GWh of storage, of which as much as half could be made 'accessible'. That is 3,500 times bigger than the Tesla battery to be installed in South Australia and about what might be required for a 100% renewable grid."* Attwater 2017

The role of aggregators

Only a small minority of consumers will have the interest and capability to actively manage the interaction of their DER with the grid. Most consumers want a 'set and forget' approach to energy. The role of aggregators who are able to manage this interaction is therefore essential to achieving the maximum shared benefit from DER. The best technical and business models for this interaction are not yet clear. In order to stimulate experimentation and unleash innovation it is highly desirable that aggregators are given equitable access to the various value streams. These value streams include:

- access to the wholesale energy market
- provision of FCAS
- the value of demand management in managing network constraints and system security
- the value of aggregated distributed generation and demand management in reducing the need for network investment.

Current NEM market arrangements were conceived in a different era and do not allow for the desirable level of experimentation. In addition, the rules are very much based on retailers as the gatekeeper to consumers.

Recommendations

- Future work on Open Energy Networks needs to explicitly acknowledge that customers who invest in DER wish to be in control of these resources. Mechanism for orchestration of DER need to provide incentives for customers to participate on an opt-in basis.

- Future work should recognise and quantify the potential for electric vehicles connected to the network to be a significant source of storage, demand management and network support services.
- Mechanisms should be available that provide access to the various value streams that DER can contribute to the electricity supply system. These mechanisms should be available to aggregators without having to work through retailers.
- Experimentation with different technical and business models should be facilitated by allowing trials to take place in the real world but in a 'regulatory sandbox' approach which allows some relaxation of the rigid structures of the current NEM rules (while keeping electrical safety paramount and with adequate levels of consumer protection).

References

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