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14 August 2018

AEMO and Energy Networks Australia

Essential Energy submission on the Open Energy Networks consultation paper

Essential Energy welcomes the opportunity to comment on the joint AEMO and Energy Networks Australia 'Open Energy Networks consultation paper' (the consultation paper).

We fully support initiatives to better integrate distributed energy resources (DER) into the distribution power system for both energy and system support services. They have significant potential to defer or avoid the need for investment, in both distribution and transmission networks and in centralised generation, to the benefit of customers across the National Electricity Market (NEM). As such, we welcome discussion on industry developments to enable a decentralised energy future.

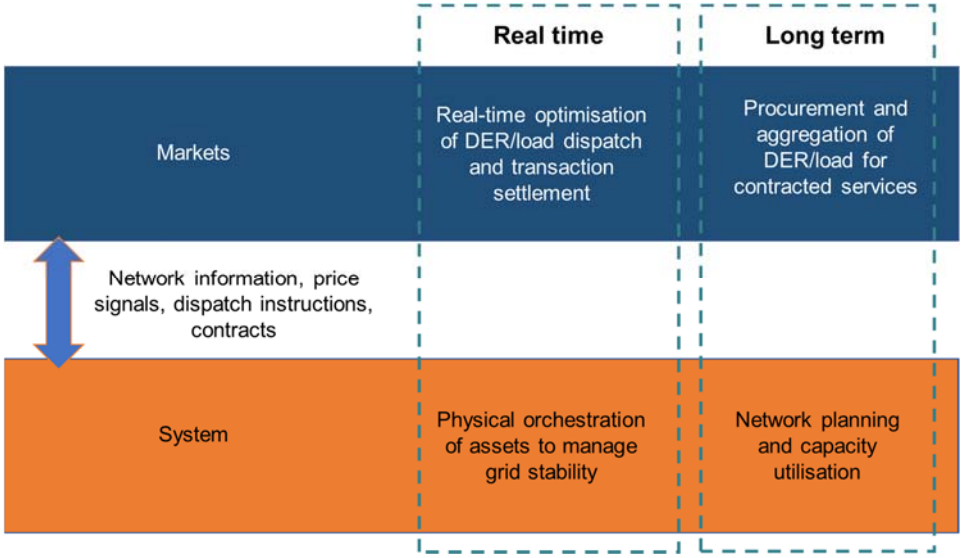
It is important, however, to consider this future in the context of the immediate problems, the emerging issues as well as the long-term goal. Presently, only the South Australian distribution network experiences the very high levels of DER penetration envisaged for the models outlined in the consultation paper. All other distribution network service providers (DNSPs) have only localised areas of high DER penetration. Essential Energy recognises that in certain areas outside of South Australia this may be impacting the wholesale market operation undertaken by AEMO. However, DNSPs are currently managing the integration and optimisation of these DER, and there are existing mechanisms in place to address specific and short-lived constraints between AEMO, transmission networks and distribution networks. We acknowledge that these mechanisms represent a very limited toolset that will not meet future requirements, however there are more fundamental issues, outside of South Australia, that need to be tackled before addressing wholesale market operations.

Essential Energy is therefore concerned about the consultation paper's focus on the need to agree a market model(s) ahead of building the necessary DNSP capabilities required for the function of an open energy network. Focusing on who does what, rather than the function that needs to be performed in these early stages risks potentially pre-empting market and technological outcomes. Governance frameworks are important and greater co-ordination across the sector will be necessary, particularly with wholesale market operations. The focus over the next few years needs to be on facilitating the functionality that *consumers* will require and how networks and retailers, aggregators and other energy service providers can work together to deliver that functionality at lowest cost. Once the consumer need is better understood, the link into the wholesale market can be properly addressed. To this end we have included, in Appendix 1, some suggested changes to the principles in the consultation paper to focus them more on consumer outcomes.

Greater focus on interface to customers required outside of South Australia

Essential Energy believes that it is useful to consider the open energy network concept as being made of two basic layers: a *system layer* and a market *platform layer* as summarised in Figure 1 below. The consultation paper seems unnecessarily focussed on the need to rapidly develop how these two layers will interact with the wholesale market which, as noted above, outside South Australia is not necessarily a key priority. A rush to deciding a model(s) will result in missed value from emerging market players and their business models, as well as placing a higher level of implementation risk and NEM wide transformation costs on customers.

Figure 1 – The two basic layers of an open energy network

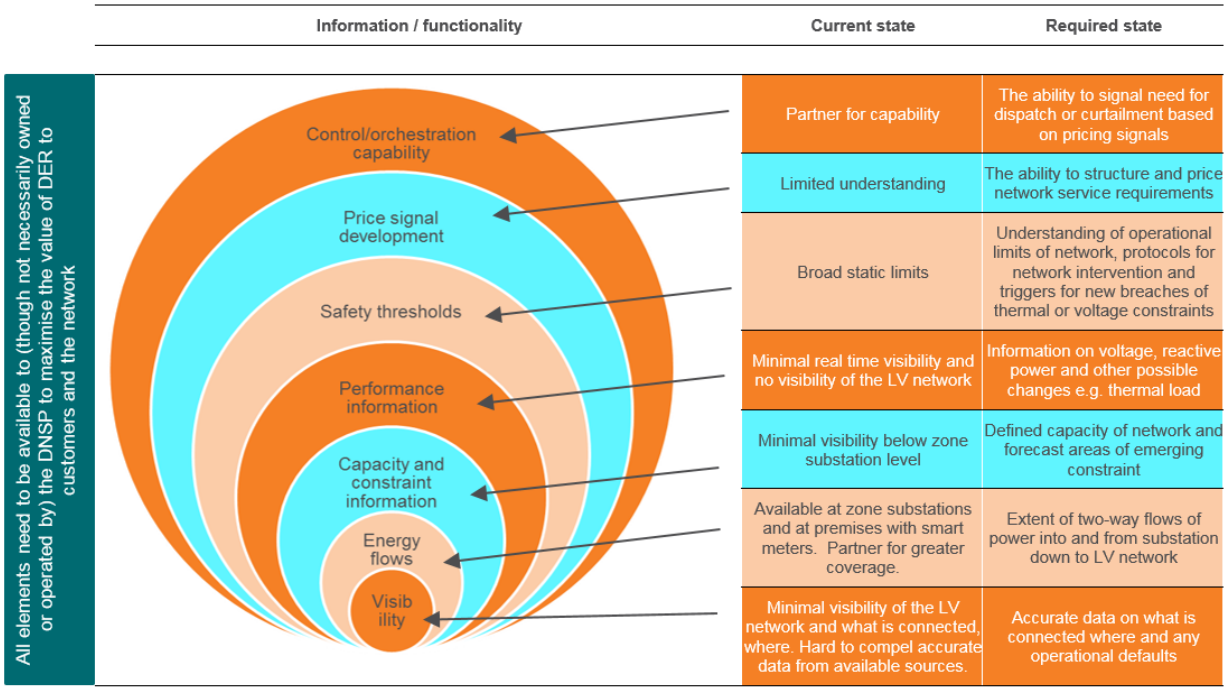


The pressing need to decide a wholesale market interface means that less focus has been given to the interface to customers (and their agents) and, importantly for customer outcomes, the interaction between optimisation and physical operation of the system. DNSPs are best placed to manage the physical requirements of the distribution assets, however the line between where legitimate network intervention is required to maintain grid stability and where the market can determine and optimise outcomes for consumers, still needs to be developed and consulted upon across the sector. This was recognised by the AEMC in recommendation two of their Distribution Market Model paper[1] which suggested the ENA lead this analysis.

Build DNSP capability to enable optimisation

Any co-ordination and optimisation on a system-wide basis will require some fundamental improvements in network data and capabilities. These capabilities include basic visibility into what is connected to the low voltage network, energy flows and so on, as summarised in Figure 2 below.

Figure 2 – DNSP capabilities requiring development to facilitate an open energy network



[1] *Distribution Market Model, Final Report,* AEMC 2017, 22 August 2017, Sydney

This is a very basic, first attempt at capturing the layers of capability that is required. Some of this capability build would require network investment, but a lot of this data and capability could be accessed through partnerships where infrastructure is already deployed. The ability to understand constraints and proposed approaches to managing constraints, at different levels of congestion or system stability, using price signals could then be tested and trialled. This capability build enables a range of products and services that consumers can leverage to their own benefit, in co-ordination with network and wholesale market requirements. This may fall within the "no regrets" actions referred to in the 'next steps' of the consultation paper, but it is not clear.

To facilitate this process, we suggest an approach like that adopted in the UK. Firstly, industry and stakeholder engagement are required to agree the common components to enable the functionality and capability of an open energy network, as outlined in Figure 3 below.

To save costs and improve efficiency, we would again suggest 'borrowing' from the work undertaken by other international bodies in this area. Essential Energy's initial perspective on the system layer functions required are outlined below.

Figure 3 – Data and capabilities required for an open energy network

	Functions	Description
Real time	**Network visibility**	Data on what is connected, where and what the dynamic state of the network is – voltage, two-way flows, reactive power, etc.
	Constraints engine	Defining capacity of network assets, down to LV segments, and monitoring performance to avoid constraints – including advance forecasting
	Market interface	Ability to transmit network information and price signals to market layer to alleviate constraints and inform market operations
Long term	**Forecasting (long-term)**	Long-term forecasting of load and DER growth across the network
	Network planning	Network planning in conjunction with energy service providers to understand capacity and capability requirements as well as establish service level agreements.
	Service procurement	Procuring network services from market layer e.g. battery discharge at certain times to manage a voltage constraint

Once the functionality is agreed, at least in the initial phase, questions of governance can be better answered. It will also allow for investment to be channelled to the highest value areas rather than focusing on creating governance structures that may not be fit for purpose.

Should you have any questions on this submission, please don't hesitate to contact Natalie Lindsay, Head of Regulatory Affairs on (02) 6589 8419.

Yours sincerely

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Appendix 1 – A framework designed for the customer

Suggested changes to the 'Principles for framework design' outlined in section 5.3 of the consultation paper are as follows (changes highlighted in **bold**):

Ensuring the optimal customer outcomes and value across short, medium and long-term horizons – both for those with and without their own DER, through:

1. Simplicity, transparency and adaptability of the system to new technologies
2. Supporting affordability whilst ~~**maintaining**~~ **managing** security and reliability of the energy system in the **interests of customers**
3. Minimising duplication of functionality where possible and utilising existing governance structures, without limiting innovation
4. Promoting competition in the provision and aggregation of DER, technology neutrality and reducing barriers to entry across the NEM and WEM
5. Promoting information transparency and price signals that encourage efficient investment and operational decisions
6. **Least cost outcome**
7. **Minimising transformation risk to customers**
8. **Placing risks and trade-offs with those participants best placed to effectively manage them**