MARCHMENT HILL CONSULTING

Friday, 10 August 2018

AMEO/ENA
Open Energy Networks Consultation

By email: sjohnston@energynetworks.com.au

Open Energy Networks consultation on how best to transition to a two-way grid that allows better integration of Distributed Energy Resources for the benefit of all customers

We appreciate the opportunity to contribute to the Open Energy Networks consultation conducted by the Australian Energy Market Operator (AEMO) and Energy Networks Australia (ENA). Marchment Hill Consulting (MHC) is a leading advisor on distribution level energy market development and the transition underway for Australia's energy grids. Our engagements involve major market participants, innovative new players, and policy makers across Australia. We have also published articles on the challenges the system faces in a high DER environment and the potential future energy ecosystem that can work to manage the risks and make the most of the opportunities.

MHC considers this consultation to be an important step towards developing regulatory framework and governance arrangements to enable the operation of distributed energy resources (DERs) to be optimised for both customers with access to these assets and the broader energy system. However, we consider the scope of options set out in the consultation paper to be unduly limited and are concerned that Open Energy Networks consultation has not taken account of framework models that may offer the most benefit for customers. In our view, the consultation paper does not consider some frameworks that would foster vigorous competition between suppliers of distributed energy products and services to maximise system benefits and offer real customer choice at the lowest price.

We note that, while the title of the consultation refers to customer benefits, and the value streams for customers with access to DERs are outlined in part 2, the bulk of the consultation paper is framed in terms of the DERs themselves, and there is no explicit reference to the larger segment of customers (i.e. those without access to DERs). From this perspective, the focus of the consultation paper tends towards avoiding technical problems by imposing controls on DERs, rather than considering how DERs may be used to cultivate vibrant distribution level energy markets that could, through their

Level 4, 530 Lonsdale Street Melbourne VIC 3000 Australia
Tel +61 3 9602 5604 **Fax** +61 3 9642 562
ABN 80 107 634 971
marchmenthill.com

interaction with centralised energy markets, reduce costs and improve security and reliability for the benefit of all customers, whether they have access to DERs or not.

Our comments on the questions posed in the consultation paper are set out below.

Sources of value

We agree that the sources of value available to DER customers are self-consumption, passive exports earning feed-in tariffs, NEM participation for energy and FCAS, and bilateral agreements for network services. While the former two value streams are readily available to customers, the latter two require aggregators to intermediate between customers and centralised energy markets. The availability of aggregators offering competitive deals to customers with access to DERs (i.e. deals that would enable these customers to stack the value of centralised market participation on top of that available by way of behind the meter optimisation and passive exports) depends on access to competitive distribution level energy markets. The development of these markets, and their impacts on prices in centralised markets for wholesale energy supply, ancillary services, and network services would in turn lower the cost components flowing through to all retail tariffs, including those of customers without access to DERs.

MHC has completed extensive confidential engagements involving quantification of value streams for optimised DERs that have access to trading platforms and distribution level energy markets. We note opportunity to reduce all elements of the electricity cost stack:

- deferred network upgrades and reduction in DER integration costs reducing network costs;
- increased solar PV exports (avoiding broad brush constraints from DNSPs) reducing wholesale supply costs;
- less volatile supply/demand balance reducing hedging costs;
- incentivisation of innovative technology and business models reducing retail costs; and
- increased proportion of renewable generation displacing high emission generation, reducing environmental costs.

We have further assessed the scope for DERs accessing distributed energy marketplaces to facilitate the development of peer-to-peer (P2P) markets. P2P trading arrangements could also realise economic value for the system, and also provide a source of social and community value.

Passive DER potential

Beyond the primary challenges of local network and security of supply challenges identified in the consultation paper, we consider a secondary challenge associated with passive DERs is the accounting issues they pose in terms of quantifying passive exports over time in the context of export constraints imposed by DNSPs or the condition of the local network itself. While the individual customers using DERs will have access to the output behind the meter and earn feed-in tariffs for exports from their meter readings, calculating aggregate small-scale solar PV exports, as will likely be required under the National Energy Guarantee, is likely to be challenging.

We consider that, rather than planning to accommodate passive DERs, the focus should be on incentivising technology and commercial opportunities such that it will be an increasingly small proportion of DERs that are not optimised to the benefit of both the asset owners and the system. In this regard, the development of appropriate technical standards and open source protocols which enable the participation of residential solar PV systems in distributed level energy markets will be important.

Active DER potential

Releasing DERs' latent value will require cultivation of competitive distribution level energy markets, and these will necessitate trading platforms that connect and prioritise aggregated bundles of DERs with centralise energy markets for wholesale supply, ancillary services, and network services. Here the challenges are significant in terms of determining appropriate technology, regulatory framework, and governance arrangements.

Many of the policy makers that MHC has worked with have supported the sandbox concept and we see this as an important transition tool to develop distribution level energy markets. Rather than attempting to forecast the time at which coordination of centralised and distribution level markets will be required to preserve system security (and collectively refraining from action until that point), MHC considers it important to embark on sandbox trials as soon as possible and ensure that learnings are distributed to policy makers, market participants, and other key stakeholders.

Framework for DER optimisation

The fundamental challenge we make of the three of the models presented in the consultation paper is that they do not make the distinction between the distribution market operation function and the distribution system operation function. We consider the commercial function of the distribution market operator (DMO) will be closely tied to the technical function of the distribution system operator (DSO), but that these two functions are very different. We also consider that DNSPs may appropriately assume the technical functions with respect to their distribution network, however, we are doubtful that competitive distribution level energy markets will emerge if DNSPs also assume the commercial or market functions as well.

The distinction we see between the DSO role and the DMO role is illustrated by considering an example involving two orchestrated bundles of DERs – virtual power plants (VPPs) – operating on the same distribution network of 'DNSPA'. VPP1 is operated by AggregatorX, VPP2 is operated by AggregatorY, with these aggregators contracting access to DERs owned by various customers on the DNSPA network.

Consider a scenario where VPP1 has bid into the wholesale energy market operated by AEMO, VPP2 has bid into the has bid into the network services market operated by DNSPA (e.g. a future state of the RIT-D process). Some of the DERs that the aggregators have nominated to support their respective bids sit on the same feeder line, the connection point of which does not have the capacity to dispatch all contracted DERs at the same time. This constraint has been identified by the DNSP.

Which DERs get dispatched – those providing wholesale market services or those providing network services? How is this determined?

The issue arises regarding the priority of DERs in VPP1 and those in VPP2 within DNSPA's distribution network. Prioritisation between VPP1 and VPP2 would require some sort of market rules or market mechanism. Having a DNSP determine these rules or run this market mechanism presents a clear conflict of interest if they are invested in the dispatch of VPP2. The rules around how this market settlement question is resolved is a market operation function, not a system operation function. The system operation function determines the export limits on the feeder to ensure that, regardless of the market behaviour, the system continues to operate within its physical limitations. This is why we consider that the role of the market operator should be distinct from the system operator. Hence, the use of the term independent System Operator (iDSO) for the third framework is problematic.

This hypothetical example need not become a reality and an alternative future scenario could involve vibrant distribution level energy markets that efficiently prioritise competing VPP bids for wholesale supply, FCAS, and network services. This alternative scenario would require DMOs that are distinct from DSOs and perform a commercial rather than technical function. Such DMOs would:

- contractually connect distribution level response services offered by DERs to aggregators (which may be DNSPs, retailers, or new entrants) seeking to buy these response services;
- define the service agreement between the sellers and buyers of distribution level response services utilising DERs;
- prioritise dispatch of DERs nominated by aggregators to centralised markets;
- confirm that the sellers offering DERs have acted in accordance with the terms of their service agreements;
- facilitate reconciliation of service agreements through market settlement taking account of dispatch prioritisation; and
- inform the centralised markets operated by AMEO of distribution level commercial activity.

While AEMO currently performs a market operator function for the NEM and will necessarily have an important technical role in any distribution level trading platforms that are implemented, we do not consider AEMO well suited to operate distribution level energy markets in their emergent phase. We consider that through regional developments deep and liquid markets for distribution level products and services will be developed, with the possibility that such regional markets may well link to form a national distribution level energy market at some stage in the future.

Immediate actions

MHC considers that the Open Energy Networks consultation needs to reframe its analysis from the customer's perspective, mindful that this will required vibrant distribution level markets where aggregators can compete on a level playing field, not only in relation to each other within a nominated centralised market, be it wholesale supply, FCAS, or network services, but across centralised markets to achieve the most efficient outcome for the system.

We consider a useful next step would be to develop a series of detailed use cases for DER trading and clearly define all of the functions involved in each of these use cases.

Only once the functions are clear and defined in relation to real trading situations will it be easier to discuss different options for organising these functions amongst existing and new entities to ultimately determine which entity is best placed to undertake each function.

Once again, we applaud the ENA and AEMO for embarking on the Open Energy Networks initiative – it is a conversation the industry needs to have and we look forward to continuing to play a role in shaping the outcome for the benefit all customers.

Best Regards,

Ryan Wavish
CEO, Marchment Hill Consulting

About MHC

MHC is a management consulting firm **determined to make a difference** by serving the needs of the energy and water sectors in Australia.

Our quarterly journal, QSI Online, shares our insights with the industries we serve and empowers businesses with high quality, content-rich and contemporary information relevant to their industry.

Read it at www.marchmenthill.com/qsi-online

Our Philosophy

The MHC philosophy, validated and reinforced by our work for clients around the world, holds that the value (V) of a consulting intervention rests on three cornerstones:

$$V = \frac{Q \times S \times I}{}$$

Value of Engagement — *Quality of Insight* — *Support for Change* — *Implementation with Integrity*

Marchment Hill Consulting
Level 4, 530 Lonsdale Street
Melbourne, Victoria 3000, Australia
Phone: +61 3 9602 5604
Fax: +61 3 9642 5626