

5/11/2015

Mr John Pierce
Chair
Australian Energy Market Commission
PO Box A2449
Sydney NSW 1235

Lodged online via: www.aemc.gov.au

Dear Mr Pierce

Integration of Energy Storage Discussion Paper

TransGrid welcomes the opportunity to respond to the AEMC's Discussion Paper on its Integration of Energy Storage project.

TransGrid owns and operates the high voltage electricity transmission network connecting generators, distributors and major end users in New South Wales and the Australian Capital Territory. TransGrid's network is also interconnected to Queensland and Victoria, providing an electricity system that makes interstate energy trading possible.

The AEMC's discussion paper is timely given that the energy sector is in a state of transformation driven by consumers and emerging technologies, including energy storage. TransGrid broadly agrees with many aspects of the AEMC's discussion paper, particularly its finding that no major changes to the current regulatory framework of the National Electricity Market (NEM) would be required to integrate storage technologies. However, this does not mean that some changes or improvements are not required to help integrate existing and new storage technologies to meet the needs of consumers and the broader market.

TransGrid notes that a considerable difference exists between the primary drivers behind the uptake of energy storage by customers, network businesses, generators and retailers. These differences inform not only the decisions of whether to invest in storage devices but also how they are operated. Therefore these differences must be taken into account when considering the potential regulatory implications of energy storage.

TransGrid offers the following comments for the AEMC's consideration.

Ring-fencing and control of energy storage devices

The AEMC recommends that strong ring-fencing be applied to network businesses deploying storage behind the meter and Transmission Network Service Providers (TNSPs) entering competitive markets. TransGrid supports the principal intent of ring-fencing which is to separate regulated and competitive services to ensure competition occurs on a level playing field and notes that TNSPs are already subject to strong ring-fencing under the National Electricity Rules (NER). However, there is a risk that efficiencies of scale and benefits from integration with network planning may not be captured by the AEMC's recommendation. It is

important not to impose unnecessary burdens on businesses and the Australian Energy Regulator (AER) in enforcement and compliance.

For example, the AEMC's case study of the Energy Storage for Commercial Renewable Integration project highlights that the owner of the energy storage device, in this case a TNSP, determines the dispatch priority rights when there are multiple potential revenue streams. This is important as in many cases, the multiple revenue streams could be in conflict with each other. By extension, the same could apply for behind-the-meter energy storage devices which may be prioritised for other services. In such a case, a network business may not necessarily be able to reliably call upon a non-network controlled behind-the-meter device. This may be a potential barrier to using behind-the-meter energy storage devices for network support given the strict reliability standards which TNSPs must adhere to. TransGrid suggests the AEMC consider this issue in its final paper.

Competition and economic efficiency are linked but distinct concepts

The AEMC have stated their preference for competitive outcomes through the contestable delivery of products and services. While TransGrid agrees with the goal of creating efficient outcomes, favouring competition does not necessarily achieve this.

TransGrid considers there is a role for central coordination as the local optimisation of individual storage devices does not necessarily lead to the optimisation of the system as a whole. Without a central coordinating entity, the most economically efficient outcome overall may not necessarily be achieved. TransGrid considers that TNSPs are well placed to provide such a role given their position between centralised generation and the distribution networks as well as their role in joint planning exercises in each NEM region.

TNSPs currently have a weak incentive to pursue innovation projects

In its discussion paper, the AEMC has stated that the Network Capability Component (NCC) of the Service Target Performance Incentive Scheme (STPIS) incentivises TNSPs to pursue innovative storage projects. TransGrid does not consider this to be the case as there is not enough evidence to support the AEMC's conclusion at this stage. The NCC is the newest component of the STPIS and TransGrid is the only TNSP to date to have proposed an energy storage project as part of this scheme – to install a pilot energy storage device in the Sydney area on the load side of a constraint.¹

The NCC is designed to incentivise TNSPs to pursue low cost projects that deliver material benefits to the market in the short term through increased network capability, availability or reliability. As such, the AER has powers to conduct reviews of projects under the NCC and can reduce the payment to the TNSP if the project has not resulted in expected market benefit. The AER's powers of review have been further strengthened in the latest revision (version 5) of the STPIS. Innovation projects, by their very nature, may not be able to ensure that clear market benefits are delivered. This provides a weak incentive for TNSPs to pursue innovation projects and may even discourage TNSPs from pursuing innovation projects under the NCC.

By contrast, distribution businesses have access to a Demand Management Innovation Allowance (DMIA) which explicitly targets research and development projects. Further, it does

¹ TransGrid, *Network Capability Incentive Parameter Action Plan*, May 2014, p. 36

not have requirements for quantifiable market benefits to be realised from the project. TNSPs are currently excluded from the DMIA.

In addition, the projects eligible for inclusion into the NCC must be relatively low value capital projects. At the current prices for storage technologies, this cost threshold limits the capacity of storage devices that can be procured to levels which may be insufficient to meet network constraints at the transmission network-level. As the technology develops and prices decline, the capacity that can be procured will presumably increase accordingly to the stage where transmission network-connected storage devices can be a cost-effective solution. However, in preparation for this, TNSPs will likely need to undertake pilot projects in order to understand the ways that the storage devices behave and can best interact with the existing network.

TransGrid recommends that the AEMC take these factors into account in its thinking regarding TNSPs' ability to pursue innovation projects.

TransGrid's energy storage innovation project

TransGrid, in its 2009-14 regulatory control period, undertook an innovative energy storage and solar PV integration project called iDemand at TransGrid's Sydney West site which was a finalist in the 2015 Clean Energy Council Innovation Awards. It was funded under an allowance provided by the AER to pursue research and development in demand management. The project installed 98 kW of solar PV, a 100 kW/400 kWh lithium-polymer battery and high efficiency LED lighting to reduce local site demand. In addition, the system has a web portal that provides iDemand's live status and historical data for download. The focus is to use the system to achieve definitive results in grid innovation including through collaboration with academic and industry bodies.

TransGrid considers that such a project could not have been funded under the NCC of the STPIS.

Incentives for TNSPs to defer network augmentation would benefit from greater clarity

The AEMC also concludes that network businesses are encouraged under the current regulatory framework to pursue energy storage options where it is cost-effective. It considers that the Capital Expenditure Sharing Scheme (CESS) and Efficiency Benefit Sharing Scheme (EBSS) provide this incentive where the storage project would defer or avoid capital or operating expenditure.

It is unclear whether the payment available under the CESS and EBSS would provide sufficient incentive to balance the ongoing certainty of return provided by a network option as part of a network business' Regulatory Asset Base.

In addition to the CESS and EBSS, distribution businesses can also access a Demand Management Incentive Scheme (DMIS) which is specifically intended to address the potential bias between a network option and non-network option. TNSPs are currently excluded from the DMIS.

Communication standards for energy storage devices are an important consideration

One of the key findings of the CSIRO report, which helped inform the AEMC's discussion paper, recommends *"the deployment of stationary battery storage could have a significant*

impact on peak demand growth but could be greater with more coordination of price signals.”² Acknowledging that in the AEMC’s preliminary findings “*storage has the potential to generate a number of value streams [to a number of different parties],” and “control of storage devices...should be based on market-based price signals.”³* TransGrid anticipates that different market-based price signals – both temporally and geo-spatially dependent – could exist for each value stream, increasing the coordination complexity for a single storage device (via a consumer, retailer, aggregator, or third party if located behind the meter). For example, demand response for gen-tailers is spot market driven while demand response for networks is both outage and local demand driven.

TransGrid considers there is merit in encouraging standardised open implementations, such as OpenADR, to communicate these price signals in a common language between interested parties (excluding residential appliances which would be covered by the AS-4755 standard). Open standard based implementations have the potential to expand the choice of demand response devices (both server and clients) and integrated building management systems from different vendors, whilst being interoperable for different parts of electricity supply chain.

New demand response standards need to be piloted in Australian conditions and jurisdictions before they can be adopted more widely. TransGrid suggests that there may need to be clarification of the regulatory treatment of the communications infrastructure in such a ‘non-proven’ pilot program, once proven and incorporated into providing network support solutions.

TransGrid remains committed to further pursuing energy storage innovation

TransGrid encourages the AEMC to further consider whether the current regulatory framework appropriately encourages evolution and innovation, particularly for network service providers given the unique role they play in connecting and coordinating centralised generation and distributed generation and demands.

TransGrid looks forward to continuing to engage with the AEMC on this project. If you would like to discuss any matter raised in this submission, please contact Caroline Taylor on (02) 9284 3715.

Yours faithfully,



Greg Garvin
Executive General Manager/ People, Strategy and Stakeholders

² CSIRO, *Future energy storage trends: an assessment of the economic viability, potential uptake and impacts of electrical energy storage on the NEM 2015-2035*, September 2015, p. vi

³ AEMC, *Integration of Storage – Regulatory Implications*, October 2015, p. 65