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Ms Merryn York
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Lodged via website: ERC0280

Dear Ms York

**TransGrid response to the Integrating Energy Storage Systems into the NEM – Consultation paper**

TransGrid welcomes the opportunity to respond to the Australian Energy Market Commission's (**AEMC**) consultation paper on Integrating Energy Storage Systems (**ESS**) into the National Electricity Market (**NEM**).

TransGrid is the planner, operator and manager of the high voltage transmission network connecting electricity 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, and is instrumental to an electricity system that facilitates competitive low cost electricity supply for consumers.

Australia is in the midst of an energy transition. This is primarily driven by changing community expectations and choices, advances in renewable energy technologies, retirement of existing generation, and the adjustments required in Australia's economy to meet our international climate change commitments. These changes raise complex issues in relation to the design of the NEM, which must adapt to these changes and provide the basis for low emissions, reliable supply at the lowest cost to consumers over the long run.

**Storage can help support the energy transition**

We support the AEMC's consultation to better integrate ESS into the NEM as the role and importance of these systems in maintaining system security and reliability increase. We note that the focus of this consultation is on how the National Electricity Rules (**Rules**) should evolve to integrate ESS in order to support the market as it transitions and not on the benefits of ESS in the NEM. However, we believe it is important to highlight the benefits of ESS in the NEM as the market transitions.

The integration of ESS is critical to support this transition by providing through firming and system security services that support the delivery of affordable and reliable electricity to consumers. The increase of renewable energy generators and withdrawal of synchronous generation creates a number of technical challenges at both ends of the network, including issues around the stability, volatility and complexity of the electricity system. ESS may provide the technical functionality required to solve many of these issues and ultimately represent a critical network asset for the transmission network service provider (**TNSP**) to fulfil its obligations under the National Electricity Objective (**NEO**). ESS can be a crucial component to achieve a reliable, secure, low emissions, and cost-effective future electricity system.

ESS have been found to be able to provide a wide array of services. These include energy arbitrage, frequency regulation, voltage support, black start, transmission congestion relief and transmission deferrals. ESS are also expected to provide a cost-effective solution to both inertia and system strength shortfalls on the network in the future. A number of these benefits have been highlighted in

TransGrid's Project Assessment Draft Report for maintaining reliable supply to Broken Hill.[1] All the preferred non-network options have an energy storage component, with grid support capability. These were determined to deliver the desired outcome of providing back-up and reliable supply to Broken Hill for the future that is consistent with the NSW Electricity Transmission Reliability and Performance Standards whilst minimising costs to consumers.

A number of the services available from ESS are either currently provided by TNSPs, or are services that would be considered to be increasingly important for TNSPs to safely manage an ever more complex electricity network. In TransGrid's view, ESS are a new type of critical network asset with operating and performance characteristics that TNSPs can utilise to meet the future challenges of managing the electricity network with a new generation mix. The Rules can be improved to better integrate grid scale ESS into the NEM and accommodate the associated new business models that are emerging.

TransGrid supports the proposed changes to the Rules to defining ESS and writing specific Rules for them, as proposed by Australian Energy Market Operator (**AEMO**) as this would increase clarity and transparency for all stakeholders. In particular, our main areas of interest fall under three main headings, which are discussed further below:

1. Special category in the Rules for ESS
2. The application of fees and charges
3. Performance standards

**Special category in the Rules for ESS**

TransGrid supports a new registration category as proposed by AEMO, to ensure that the full range of benefits provided by different technologies and business models are accessible. Further, the registration framework should minimise the operational complexity and administrative burden for AEMO and participants.

Creating a registration category for ESS would provide clarity on performance standards, charging, and create efficient market processes for market participants and system and network operators.

The Rules should clearly specify that storage technologies (for example associated with Synchronous condenser) used by TNSPs for a prescribed network requirement be excluded from any potential changes to the Rules. Current arrangements for these network assets, with no registration requirements, should remain the same.

**The application of fees and charges**

TransGrid supports the AEMC and AEMO's proposed approach in which a scheduled ESS should be treated comparably to a generation asset and not pay Transmission Use of System (**TUoS**) charges. Whilst an ESS does charge from the network and in that respect is similar to a customer, it does not use that energy other than to redispatch at a more economically beneficial time to the market. To put it most simply an ESS is most likely to charge when demand and prices are low and dispatch at times when demand and prices are high, therefore, when its services are most valued. In practice, it is closer in its impact on the network and the market to a generator. Frequency Control Ancillary Services (**FCAS**) services are offered throughout the day and both the raise and lower services are akin to the operations of a generator providing those same services. Treating FCAS raise services as customer load because they are provided from an ESS would be inconsistent with other generators providing the same service and effectively a penalty for what is otherwise a more precise, higher value service than traditional generators are able to provide.

**Performance standards**

TransGrid supports AEMO's proposal to address the application of performance standards to an ESS via a rule change to provide clarity to TNSPs and market participants. Currently, the Rules do not adequately cover hybrid facilities performance when they are operating in load mode (e.g. batteries charging, storage in pumping mode). The lack of clarity can cause issues for TNSPs in negotiating

[1]TransGrid RIT-T PADR Maintaining supply to Broken Hill, https://transgrid.com.au/brokenhillsupply

certain performance aspects, as there is significant confusion on what should be covered in the Generator Performance Standards and Customer Load Performance Standards. Introducing specific performance standards for individual assets would be efficient and allow TNSPs to capture the relevant technical performances for both generation and load modes.

We also support greater visibility of these new assets behind the connection point for both AEMO and network service providers. In particular, the performance aspects during load mode (battery ESS charging or hydro storage pumping) should be captured more extensively than what is currently included in the present Customer Load Performance Standards; such as contributions to voltage control, frequency control and during faults.

TransGrid appreciates the opportunity to comment on this Consultation Paper. If you would like to discuss this submission, please contact Zainab Dirani on 02 9284 3534.

Yours faithfully

Eva Hanly
**Executive Manager, Strategy, Innovation & Technology**