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Ms Anna Collyer
Chair Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2001

Submitted online: www.aemc.gov.au

Dear Ms Collyer

Joint AEMC and AEMO ESS and Inertia Paper

Transgrid welcomes the opportunity to respond to the joint Australian Energy Market Commission's (**AEMC**) and Australian Energy Market Operator's (**AEMO**) paper (**Joint Paper**) on essential system services (**ESS**) and inertia in the NEM.

In our role as the transmission planner and operator for NSW and the ACT for over 40 years, Transgrid has developed unique expertise and capability in managing one of the key parts of the Australian energy system. Our primary responsibility is to ensure the ongoing security and reliability of the system as it transitions to higher renewables penetration to support Australia's carbon target of 43% reduction by 2030 and net zero by 2050.

The higher renewable penetration will create a number of challenges for the power system. In particular, how to replace the inertial stability that is currently provided by the synchronous generators. As inertia is a fundamental aspect of a stable power system, we strongly believe that Transmission Network Service Providers (**TNSP**) are best placed to provide this service as it was determined for system strength¹.

Power system quality (including inertia) is the most critical element in maintaining the secure operation of the power system. The management of inertia issues in a well-coordinated and clear manner will ensure that the power system is operating in a secure manner

Inertia

The AEMC and AEMO Joint Paper investigates a rule change request by the Australian Energy Council (**AEC**) submitted in December 2021² proposing an inertia spot market. The AEC noted that while an inertia spot market is not immediately required for power system security, the work required by AEMO and the AEMC is likely to take considerable time.

¹ AEMC Efficient management of system strength on the power system Final Rule See: <https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system>

² See: <https://www.aemc.gov.au/rule-changes/efficient-provision-inertia>

The Joint Paper has referenced the Energy Security Board and has identified a spot market approach for valuing and procuring inertia, while in the first instance relying on the current arrangements for TNSPs to procure minimum levels of inertia. They also identify the potential to use a system security mechanism to procure additional inertia when required.

Transgrid agrees that there needs to be a process in place to manage inertia issues as the NEM moves to more renewable penetration. However we do not believe that a spot market for inertia is practical or reliable. We also do not think it would contribute to the efficient provision of inertia and is therefore not required – to the contrary it could increase the risk of power system failure. The reasons for this include:

System security and reliability: Inertia is a fundamental aspect of power quality and without the required amount available in real time (which can vary dramatically), there is risk of power system failure. In a market solution, the scope and willingness of the providers of inertia to be responsible for the liability of system failure (with adequate recourse) is likely to be an issue.

Therefore, it is Transgrid's view the planning and delivery of long term inertia requirements are best provided by the primary TNSP in the region who already has accountability and liability for the reliability and security of the transmission system³.

Untested technology: The development of synthetic inertia is a relatively new area of technology and is untested on a large scale. There are multiple emerging technology solutions being developed for inertia short falls by different market players. A market solution would make the rigorous testing and assessment process of whether the solution would meet performance standards difficult.

Similar to other network augmentation projects, once a system need for inertia is identified by the TNSP, an economic and rigorous assessment process can be provided on a whole of life and independent basis, to identify the least cost outcome for consumers.

Cost efficiency: The most cost effective technology solutions being developed for inertia are emerging to be those that are also providing other network services needed to operate the energy system. With system strength services provided by the primary TNSP, the planning and delivery of inertia services (including synthetic inertia) can be provided together with other system strength services on a whole of network basis, which is the most efficient outcome for consumers.

Market dynamics: If the value of inertia is left entirely to the market, there is a risk of unintended consequences to electricity prices. By way of example, the amount of inertia required in the power system is directly correlated to the amount of available generation and storage. Therefore, there is a risk that the market participants in a spot market may have competing commercial agendas, resulting in a real or perceived ability to impact prices.

An alternative way to ensure that the required amount of inertia is available for the integrity of the power system (but without these issues outlined above) is to provide a mechanism for the TNSP in the region to have a streamlined RIT-T process for providing these system critical services. This streamlined process

³ This was determined to be the case for system strength, and therefore should be replicated here. See: <https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system>

would need to facilitate a shorter timeframe between identification of any inertia shortfall and delivery of the solution and would have the benefit of ensuring that the costs are prudent and efficient.

We look forward to working with the AEMC and AEMO to further refine work on ESS and inertia in the NEM. If you require any further information or clarification, please feel free to contact Zainab Dirani, Senior Advisor, on zainab.dirani@transgrid.com.au.