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Australian Energy Market Operator

By email: gpsrr@aemo.com.au

Dear Sir/Madam

2023 General Power System Risk Review Draft Report

Transgrid welcomes the recommendations set out in Australian Energy Market Operator's (**AEMO**) 2023 General Power System Risk Review (**GPSRR**) report draft. As the jurisdictional planner, operator, and manager of the transmission network in NSW and the ACT, Transgrid is keen to assist AEMO in ensuring energy system risks are identified and appropriate arrangements are in place for managing the priority risks.

Transgrid has been collaborating closely with AEMO through joint planning on the development of the first annual GPSRR report. We are supportive of AEMO's amendments to the PSFRR as it provides clarity to the market in how risks are managed on the transmission network. It plays an important role in reviewing a prioritised set of risks comprising events and conditions that could lead to cascading outages or major supply disruptions on the network. As the National Electricity Market (**NEM**) transitions to greater renewable penetration and we experience greater climate extremes, it is vital that critical system risks are identified and mitigated to minimise disruptions to the network.

Given the seriousness of the priority risks assessed by AEMO, Transgrid considers that it is critical that AEMO's recommendations are implemented in a timely way, along with logical subsequent actions. For example, where recommendations involve undertaking assessments or developing contingency plans, it is important that these plans and identified remedial actions become 'actionable', so that projects can be implemented without delay. This should include providing clear funding pathways and defining roles and responsibilities for projects so that they can be delivered efficiently and in the long-term interests of energy consumers.

For the recommendations put forward in the draft report:

- Transgrid supports all recommendations 1 through 9.
- Transgrid has begun discussions for mitigation of identified QNI instability risk under recommendations 2 and 3 in conjunction with AEMO and Powerlink.
- Transgrid supports recommendation 4 that each state jurisdiction develop emergency reserve and system security contingency plans, which can be implemented at short notice if required. This is a prudent recommendation that will help ensure supply adequacy and power system security for customers in the NEM and Transgrid would support joint efforts to study the events and development plans in NSW to progress this recommendation.

- Transgrid strongly supports recommendation 5 that TNSPs identify any operational capability gaps in the context of the transforming power system and changing risk profile of the NEM. For this recommendation it is important that TNSPs and AEMO work together to define the appropriate solutions to these gaps and find a suitable pathway to obtain funding to enable them to proceed in a timely way, which is difficult under the current framework. Transgrid welcomes AEMO's involvement to play a key role in facilitating these crucial projects to proceed.
- Transgrid supports recommendation 6 that, in line with the requirements of NER S5.1.8, TNSPs continue to consider non-credible contingency events which could adversely impact the stability of the power system. In Transgrid's experience, it is very difficult to secure funding to implement projects related to these risks under the existing regulatory framework, particularly for managing multiple contingency events as outlined in NER S5.1.8. Where AEMO considers these risks to be unacceptable, an alternative project justification and funding pathway may be required.
- Beyond the priority risks identified in the draft 2023 GRSRR, Transgrid also encourages further discussions to investigate the feasibility of undertaking preventative measures through NEM dispatching system for the considered contingencies. These measures can potentially involve integration of multiple systems such as weather monitoring, on-line small-signal analysis, SCADA, and other relevant platforms. In this investigation, it will be important to leverage non-conventional tools such as artificial intelligence and adaptive controllers in addition to conventional tools while ensuring the cost of electricity for the market users remains unaffected.
- Transgrid is also considering resilience risks that are likely to emerge as the power system evolves with the development and connection of new very large Renewable Energy Zones and major new transmission infrastructure. As generation moves further away from load centres, and there is potential for very large volumes of generation capacity to be connected to the transmission backbone radially, through single substations or double circuit high capacity 500 kV lines on a single easement, the size of credible contingencies will become much larger, and new (non-credible contingency) vulnerabilities will emerge on the network. At this scale, failures have the potential to lead to cascading outages, with system-wide impacts. To address these challenges, Transgrid considers that it is prudent to consider 'N-1 Secure' planning criteria for new major projects and connections, and that it may be warranted to place an upper limit on the generation/network capacity that may be connected to a single point (as has been considered and implemented in other jurisdictions globally).

We look forward to continuing work with AEMO to further refine and implement the GPSRR methodology.

Yours faithfully



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