

NEED/OPPORTUNITY STATEMENT (NOS)



New South Wales to South Australia Interconnector (NSI)

NOS- 000000001570 revision 1.0

Ellipse project description:

TRIM file: [TRIM No]

Project reason: Market Benefits - To realise market benefits

Project category: Contingent Prescribed – Augmentation - Contingent

Approvals

Author	Jay Esson	Network Modelling & Performance Engineer
	Joseph Leung	Senior Electrical Engineer
Endorsed	Jahan Peiris	Network Modelling & Performance Manager
	Azil Khan	Investment Analysis Manager
	Garrie Chubb	Investment Support Manager
Approved	Andrew Kingsmill	Manager/Network Planning
Date submitted for approval	12 January 2017	

1. Background

This Need/Opportunity statement documents the triggers, limitations, and opportunity for TransGrid to provide solutions to South Australian supply security issues and potential market benefits.

In South Australia, conventional synchronous generation capacity reserves are reducing, with withdrawals of over 1000 MW announced to occur over the next ten years¹. At the same time, AEMO reports that there are a large number of project proposals for wind generation in South Australia, and installation of rooftop PV continues. Taking all these factors into account with state demand forecasts for South Australia, AEMO's 2016 Electricity Statement of Opportunities (ESOO) anticipates conditions where the available generation is not adequate to meet the demand in South Australia from the end of this decade under the medium and high demand growth scenarios. Under the low demand growth scenario the capacity shortfall is expected in the mid-2020s. More importantly, AEMO's 2016 National Transmission Network Development Plan (NTNDP) indicates system security issues in South Australia as a consequence of high penetration of renewable generation, especially rooftop PV. The NTNDP considers:

- > Reductions in dispatchable generation associated with high levels of PV and battery storage
- > Frequency stability issues as a result of low inertia systems and the importance of interconnection
- > Low fault level impacts on protection schemes and voltage stability during disturbances.

An option which could help to manage capacity shortfalls as well as the difficulties associated with the high penetration of renewable generation is to improve supply system diversity in South Australia by increasing the capacity of interconnections to an adjacent state such as NSW.

2. Need/Opportunity

2.1 Opportunity to address South Australia system security and supply reliability issues

ElectraNet has recently commenced investigation of options to increase the interconnection capacity between South Australia and NSW, and ElectraNet is undertaking a RIT-T on the options available to address the needs/opportunities due to energy transformation in South Australia. The Project Specification Consultation Report (PSCR)² identifies a number of network options including an interconnection to NSW South Western region³. According to PSCR, ElectraNet is considering several configurations for this particular route, one of which is installing a new 275 kV or 330 kV AC transmission line between Robertstown and Buronga (refer Figure 1 below) and reinforcing the NSW South West transmission network (west of Wagga).

¹ AEMO 'Generator Information' webpage <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information>

² Project Specification Consultation Report (PSCR) published in November 2016 – refer supporting documents in PDGS

³ There are interconnector options to Victoria, Queensland and non-network solutions that would be considered in the RIT-T as well

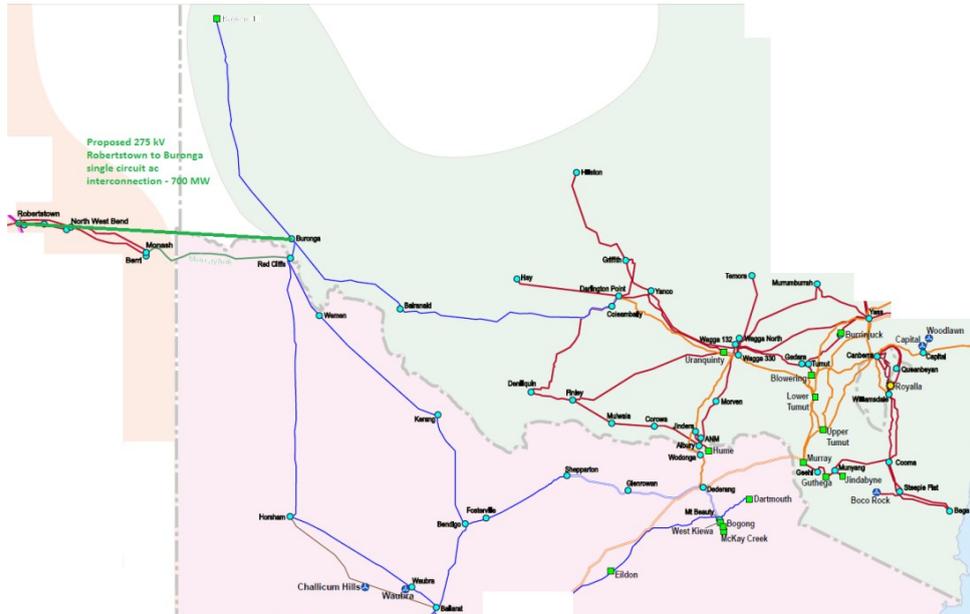


Figure 1: New interconnector from South Australia to NSW

2.2 Opportunity to address NSW potential supply issues and realise market benefits

Reinforcing the transmission network in the NSW South West area (west of Wagga) would contribute in addressing any potential supply shortages in NSW following the retirement of Liddell power station.

The table below summarises the supply demand balance:

Year	Medium Growth Demand (MW)	Total Generation (MW)	Total Interconnector Flow (MW)	Network Losses (MW)	Surplus / Shortfall (MW)
2019/20	14666	15079.8	1800	600	1613.8
2020/21	14887	15079.8	1800	600	1392.8
2021/22	15086	15079.8	1800	600	1193.8
2022/23	15219	13079.8	1800	600	-939.2
2023/24	15457	13079.8	1800	600	-1177.2
2026/27	16168	13079.8	1800	600	-1888.2
2028/29	16591	13079.8	1800	600	-2311.2

Table 1: NSW Generation Adequacy Based on Existing Generations and Interconnections

It can be seen that with the existing infrastructure, after the retirement of Liddell power station, NSW existing local generation combined with full interconnector support from other states will not be able to meet NSW demand. AEMO supports this view per the 2016 Electricity Statement of Opportunities (ESOO) report which mentions that the unserved energy (USE) level in NSW could exceed the Reliability Standard from 2021 under the high scenario, and from 2022 under the medium scenario as shown in **Error! Reference source not found.**

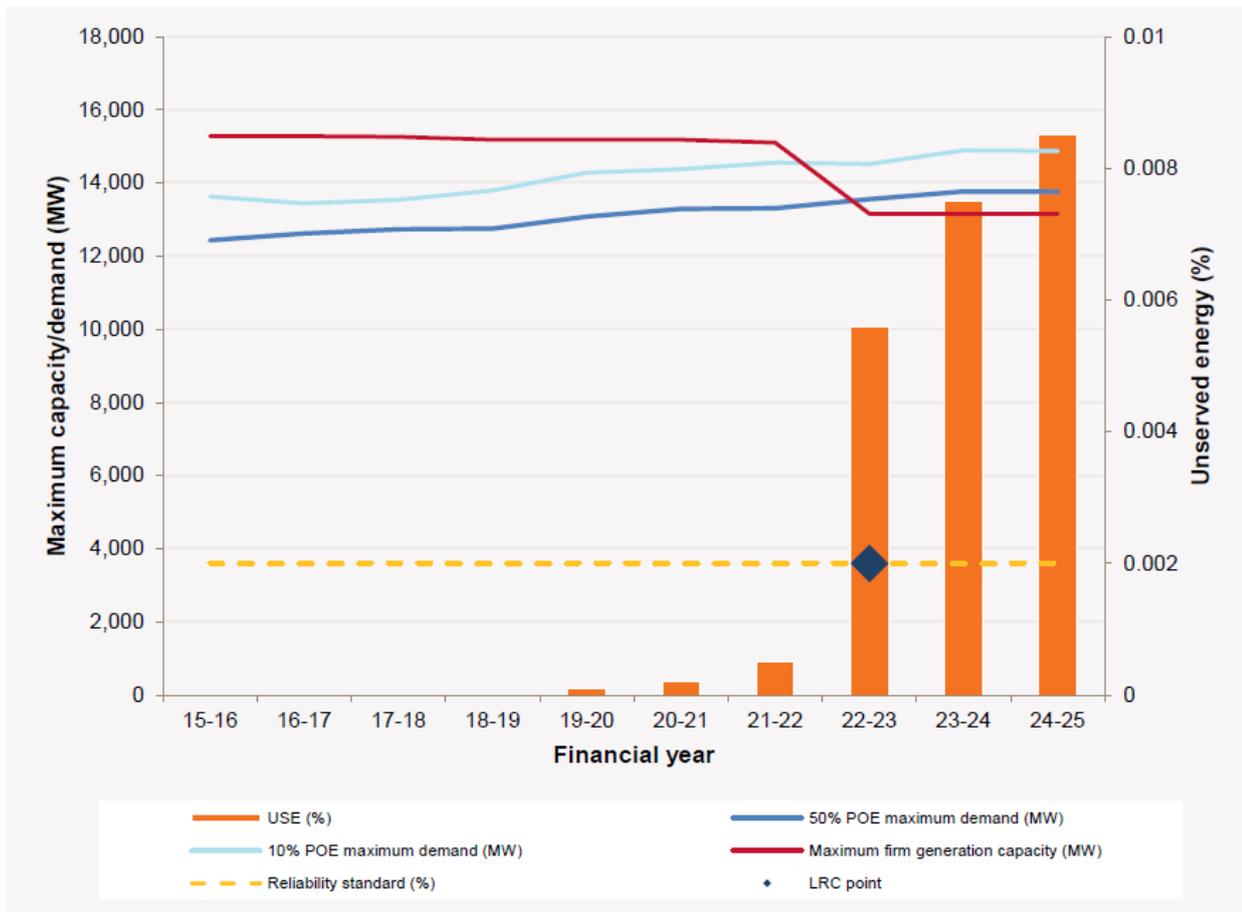


Figure 2: NSW Supply Adequacy (Medium Scenario)⁴

2.3 Opportunity to realise market benefits

There would be significant market benefits to NSW as well as National Electricity Market (i.e. reduced energy cost by dispatch of lower cost generating plant, increased competition of generators etc.) as a result of reinforcing the NSW South West transmission network.

Exclusions

This Need and Opportunity Statement only covers NSW South West network. Any augmentation requirements in Victoria or South Australia as a result of the interconnection to South Australia will be identified separately under the ElectraNet RIT-T process.

2.4 TransGrid proposes this project as a contingent project with the following triggers:

- › Successful completion of the RIT-T for the South Australian Energy Transformation, with a NSW to South Australia interconnector identified as the preferred option or part of the preferred option:
 - › demonstrating positive net market benefits; and/or
 - › addressing system security issues.

- > Determination by the AER under clause 5.16.6 of the NER that the proposed investment satisfies the RIT-T.
- > TransGrid Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

2.5 Indicative Date to Address Need

The indicative date would be based on the outcome of the ElectraNet RIT-T and determined by detailed market modelling, and NSI implementation timeframe.

2.6 Type of Service

The system reinforcement would be prescribed service.

3. Related needs/opportunities

- Need ID 1698 – Strengthening Far West Network
- Need ID 1528 – Reinforcement of Southern Network
- Need ID 1746 – Reinforcement of South Western Network for Renewables
- Need ID 1649 – Reliability of Supply to Broken Hill

4. Recommendation

It is recommended that options including all feasible network and non-network be considered to address the identified need/opportunity.