

28 February 2019
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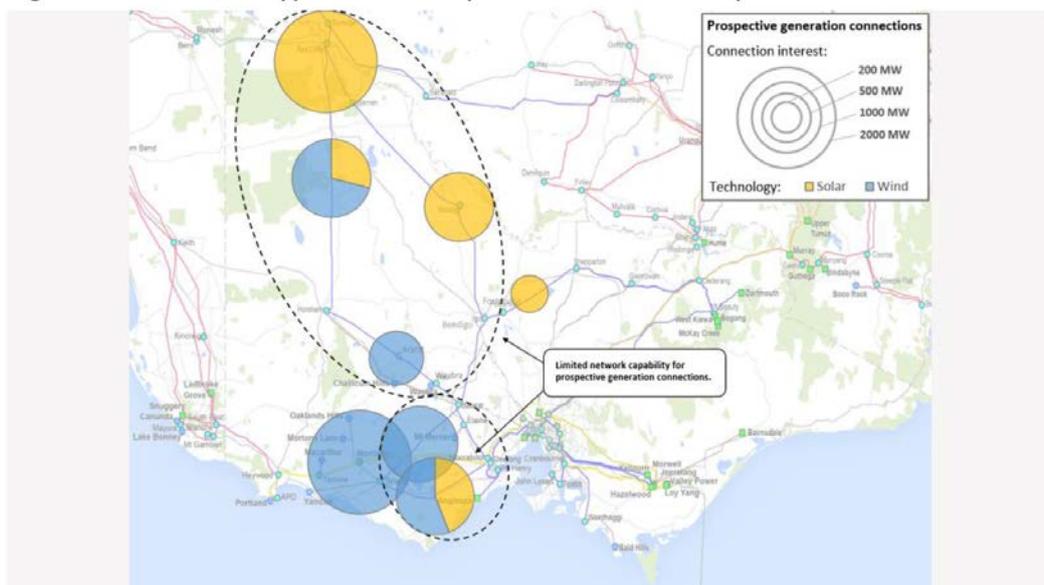
Western Victoria Renewables Integration PADR Feedback

AusNet Services welcomes the opportunity to make a submission to the consultation process for the Australian Energy Market Operator's (AEMO) Western Victoria Renewable Integration Regulatory Investment Test (RIT) Project Assessment Draft Report (PADR).

Identified need

The drivers of the Western Victoria Renewable Integration RIT are described in the Project Specification Consultation Report (PSCR) in the context of significant projected volumes of new generation connections in Western Victoria and the limitations of the transmission network that would constrain output of new generators. Generation connections were anticipated not only in the south west between Ballarat and Horsham but also anticipated in larger volumes of new generation connecting between Horsham and Red Cliffs, around Red Cliffs and around Kerang as shown in the Figure below from the PSCR. Since publication of the PSCR in April 2017, the projections used in the RIT-T analysis have been exceeded by the level of actual connections, committed new generators and interested connecting parties in this region.

Figure 2 New connection applications and enquiries in Western Victoria up to March 2017



The network limitations identified in the PSCR include:

- thermal capacity,
- system strength,
- voltage support, and
- limitations outside Victoria

that were expected to impose constraints on new generators connecting in this part of the network. These limitations are now clearly evident in the north west network. AEMO last week advised¹ market participants that “AEMO studies confirm that any credible outage (n-1) on the North West (NW) loop ... results in insufficient fault level and system strength in the area”. The modelled consequences of outages were described: “undamped oscillations can result, with potential to cause system interruptions or collapse in this region”. To manage planned outages AEMO has imposed constraints including constraining relevant generators to zero output during planned outages.

The proposed solution in the PADR addresses thermal limitations in only a small section (Ballarat to Bulgana) of the network, but does not appear to consider or address the system strength, voltage support and NEM-wide limitations.

As the principal owner and operator of the Victorian transmission network, AusNet Services is impacted by the current and long term operability and resilience of the Victorian transmission system. As such, we strongly encourage AEMO to expand its RIT-T analysis to appropriately consider and address the limitations identified in the PADR, both under system normal and across a range of operational conditions. The network needs to be fit for purpose with capability to accommodate planned outages for asset maintenance, replacement or connection works, as well as unplanned outages.

Preferred option

The preferred option presented in the PADR includes:

- New 220 kV double circuit transmission lines from Ballarat to Bulgana; and
- New 500 kV double circuit transmission lines from Ballarat to Sydenham.

This option provides significant uplift in thermal capacity for generator connections between Ballarat and Bulgana. AusNet Services supports the inclusion of a new route from Ballarat to the Melbourne load centre via Sydenham as this augmentation will provide not only thermal capacity but also diversity of supply to Melbourne in the face of changing location of generation.

The minor augmentations proposed for the existing Red Cliffs to Wemen to Kerang to Bendigo and Moorabool to Terang to Ballarat lines are an important interim step and will provide a small thermal capacity uplift. AusNet Services is concerned, however that this uplift is not sufficient to support generators that are already connecting in this area and does not address thermal, system strength or voltage support constraints for additional generation in the north-west of Victoria.

System strength

System strength was identified as an issue in the PSCR and AEMO highlighted the review of responsibilities for system strength was underway in 2017. The outcome of the review was the introduction of the “do no harm” requirement for connecting generators and the ongoing responsibility of regional Transmission Network Service Providers (TNSPs) to maintain minimum fault levels (system strength) at defined nodes, including during planned and unplanned outages and under a range of dispatch patterns. The exemption or grace period for compliance with the new rules meant that generators committed before a specified date could proceed with connections without modelling or

¹ Industry Communique: Planned Outages in the North Western Network & South West NSW Transmission Network, February 2019

addressing system strength impacts. The result is an inherent inadequacy in system strength that is unlikely to be addressed by subsequent connecting generators.

In December 2018, AEMO advised² that detailed studies to review and refine minimum system strength requirements in Victoria were in progress. Voltage and system strength constraints subsequently identified by AEMO in January 2019, indicate inadequate system strength and voltage support in the north west network, restricting planned outages and highlighting significant impact of unplanned outages. AusNet Services urges AEMO to consider new modelling information in this RIT-T and include solutions that address the system strength and voltage support deficit in the North West loop.

AusNet Services has identified a number of risks and benefits which may not have been considered in the initial RIT-T analysis and warrant inclusion. These include:

- The impact (and cost) of ongoing outage restrictions on the operation and maintenance of existing network;
- The cost of lost generation constrained off the network at times of planned outages on the Western Victorian network due to system constraints applied to reduce system security risk; and
- Increasing criticality and dependence on this part of the network for generation output as coal retirements proceed.

AEMO highlighted that the PADR preferred option is closely aligned with the 2018 Integrated System Plan (ISP) recommendations; AusNet Services agrees this is important. However, subsequent substantive changes in:

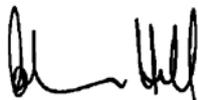
- operating environment;
- volume of new generator connections;
- improved modelling of system strength and voltage stability; and
- better understanding of the need for network resilience to early coal retirements

demand re-consideration before finalisation of this RIT-T.

AusNet Services urges AEMO to review the assumptions, scenarios and costs/benefits included in the RIT-T analysis and ensure these are updated to reflect current information.

AusNet Services continues to offer our assistance to investigate further options and would be pleased to discuss any of the comments and suggestions in this response. Please contact Jacqui Bridge, Manager Transmission Development, if we can assist with any queries in relation to this submission.

Yours sincerely,



Adrian Hill
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AusNet Services

² 2018 National Transmission Network Development Plan (NTNDP), AEMO, December 2018