

18 May 2018

John Pierce
Chair
Australian Energy Market Commission
Level 6, 201 Elizabeth Street
SYDNEY NSW 2000

Contact: therese.grace@aemc.gov.au

Dear John,

Re: Coordination of generation and transmission investment (EPR0052)

ElectraNet appreciates this opportunity to provide a submission on the AEMC's Discussion Paper on its Coordination of generation and transmission investment review released on 13 April 2018.

South Australia has among the most abundant and high quality renewable energy resources in Australia and remains at the forefront of the global energy transformation with an unprecedented uptake of renewable generation over the last decade. Total installed renewable energy resources in South Australia exceed its combined minimum demand and export capability.

As increasing levels of renewable generation continue to displace centralised, synchronous generation as we move toward a low emissions future, improvements in the coordination of generation and transmission investment are integral to ensuring a secure, reliable and affordable electricity supply during this period of transformational change.

We therefore welcome the AEMC's consideration of key issues including likely future congestion on the transmission network, the treatment of large-scale storage projects under the current regulatory framework and the development of Renewable Energy Zones (REZs).

ElectraNet is party to Energy Network Australia's submission, which contains the network sector's response to this review. The enclosed submission provides some additional commentary and perspectives on key issues within the Discussion Paper, informed by ElectraNet's current experience in progressing the following three strategic projects in South Australia:

- Eyre Peninsula Electricity Supply Options RIT-T
- South Australian Energy Transformation (SAET) RIT-T
- ESCRI battery storage project.

This commentary also builds on ElectraNet's considerable experience in applying the RIT-T, having been party to 8 of the 19 applications of the RIT-T undertaken across the NEM to date.

Eyre Peninsula Electricity Supply Options RIT-T

The Eyre Peninsula Electricity Supply Options RIT-T ("Eyre Peninsula RIT-T") explores options to improve the reliability of supply to Port Lincoln, including options to replace or upgrade the transmission lines serving the lower Eyre Peninsula. ElectraNet's most recent assessment of line condition indicates that components of the line are nearing the end of their functional life and will require replacement in the next few years.

The options for supplying the Eyre Peninsula presented within our Project Assessment Draft Report (PADR) published in November 2017 range from maintaining current capacity levels to upgrading the entire network in order to provide greater supply reliability and accommodate future mining and/ or renewable energy developments in the region.

The AEMC's Discussion Paper provides a summary of the Eyre Peninsula RIT-T as an example where a prescribed transmission service is relevant to the development of a REZ.¹ The Discussion Paper introduces four indicative options for the development of REZs and discusses the Eyre Peninsula RIT-T with reference to "Option 1" (Enhanced information provision).

We agree with the relevance of the Eyre Peninsula RIT-T as a live example of the challenge of efficiently coordinating transmission planning and renewable generation investment. This RIT-T also serves as an example of how "Option 4" (TNSP prescribed service) or a variation thereof, could be progressed to facilitate development of a REZ.

As the Discussion Paper acknowledges:

"The existing RIT-T process does not exclude REZs if the criteria for investment can be met through demonstrating the benefits that would be provided to consumers through a coordinated investment process. An assessment of such an investment should balance both the potential for efficiency to be maximised against the appropriate allocation of the costs and risks of network investments."

Consistent with this, the Eyre Peninsula PADR explores the balance between the costs of investing in greater network capacity and the benefits of unlocking future renewable generation development, particularly wind generation, by comparing options to either:

- build a 'minimum capacity' 132 kV option now – while this option will involve lower upfront costs, it may end up costing more over the long-term (if mining and/or renewable generation develops on the Eyre Peninsula); or
- invest in slightly greater network capacity now to get the 'option value' of upgrading the network (or part of it) to 275 kV at a later date if mining and/or wind generation develop – while this option involves a greater cost upfront, it may more cost-effectively accommodate mining and/ or wind generation developments in the future; or

1 AEMC, *Coordination of generation and transmission investment Discussion Paper*, p.57.

- build all or part of the network to 275 kV initially – this would cost more upfront but would allow mining and wind generation to connect more efficiently as soon as the new network is commissioned. However, it also carries a risk that the additional network capacity could be built before it is needed, or not needed at all.

The PADR recognises that while the Eyre Peninsula has strong mining and renewable generation potential, there is inherent uncertainty in relation to when these resources will be developed. In particular, renewable energy developments on the Eyre Peninsula are heavily influenced by both Federal and State-based carbon emission policies and the quality of renewable generation resources in the region.

ElectraNet applied a combination of both wholesale market modelling and ‘real option analysis’ to address the various uncertainties surrounding future development on the Eyre Peninsula. The Eyre Peninsula RIT-T is the first RIT-T in the NEM to formally estimate ‘option value’ in relation to options which, for additional upfront cost, provide the flexibility to upgrade network capacity in the future if it is efficient to do so.

Expansion of the transmission capacity to the Eyre Peninsula was one of the priority transmission development options identified by AEMO in its Integrated System Plan (ISP) consultation paper published in December 2017, informed by the draft outcomes identified in the Eyre Peninsula PADR, and is being used to consider the benefits of establishing a REZ on the Eyre Peninsula.²

ElectraNet continues to coordinate its assessment closely with AEMO, and the ISP will both inform and be informed by key inputs and assumptions in the Eyre Peninsula RIT-T. The ISP is due to be published by end June 2018, and ElectraNet also expects to conclude the RIT-T assessment with the release of a Project Assessment Conclusions Report (PACR) by end June 2018.

South Australian Energy Transformation RIT-T

ElectraNet’s South Australian Energy Transformation (SAET) RIT-T assessment explores options to help lower electricity prices, improve system security, and support Australia’s energy transformation towards a lower carbon emissions future.

A Project Specification Consultation Report (PSCR) was published in November 2016 to commence the RIT-T consultation process. The options investigated include ‘non-interconnector’ options as well as options involving interconnectors to neighbouring regions. The interconnector options included additional capacity ranging from 300 MW to 2,000 MW.

In accordance with RIT-T requirements, future uncertainty is addressed through the use of scenarios which reflect different assumptions about future market development, as well as other factors that are expected to affect the relative market benefits of the options being considered. The key variables for the SAET RIT-T include electricity demand, long-term gas prices, emissions reduction policy targets and system security settings for South Australia.

ElectraNet has based its analysis on the key inputs and assumptions to the National Transmission Network Development Plan (NTNDP) published by AEMO and the ISP. Where it has been necessary to depart from these assumptions, for example where more up to date or detailed information is available, some divergence from these scenarios has been applied and documented.

² AEMO, *Integrated System Plan Consultation*, December 2017, p.48.

For example, in response to a number of submissions regarding gas price assumptions, ElectraNet has widened the high and low forecasts for gas prices in its assessment, compared with those adopted by AEMO, in order to provide a broad enough range of assumptions for the purposes of testing the robustness of the RIT-T outcome.

AEMO's ISP consultation paper identifies increased interconnection between South Australia and the eastern states as a priority transmission development option³. AEMO is providing review and input to this RIT-T assessment, and proposes to review and use the preferred solution identified in the assessment in its forthcoming ISP. AEMO and ElectraNet are also working closely to ensure a coordinated approach between the SAET RIT-T and the Western Victoria Renewable Integration RIT-T, in the interests of integrated national transmission development.

Again, ElectraNet's RIT-T analysis is being closely coordinated with AEMO, with the key inputs and assumptions both informing, and being informed by, the analysis underpinning the ISP, which is focused on identifying and enabling the efficient development and connection of REZs. ElectraNet is working to publish a PADR for the SAET RIT-T by the end of June 2018.

Learnings from recent RIT-T applications relevant to this review

The Eyre Peninsula and SAET investigations are live examples of how ElectraNet is currently addressing the development of prospective REZs within a RIT-T assessment and progressing priority transmission development options identified in the ISP consultation process.

This experience is demonstrating that the current regulatory framework can accommodate the economic assessment of strategic transmission investments, while accounting for the uncertainty of priority REZ locations and allowing for effective coordination with AEMO as it develops its inaugural ISP. This provides for integrated system planning by AEMO, and retains commercial responsibility for network investment and accountability for shared network outcomes with TNSPs.

This approach can be further improved under the current framework by allowing the inputs and assumptions considered by AEMO in respect of an ISP identified project to provide a clearer foundation for the purposes of the corresponding RIT-T assessment to be undertaken by the relevant TNSPs. Enhancements to the AER's RIT-T Application Guidelines as a result of its current review can also assist in this regard.

Examples of the specific improvements being progressed include:

- inclusion within AEMO's ISP of as much practical information as possible regarding the inputs and assumptions for its REZ analysis, including for example:
 - specific information on each REZ, such as resource quality, resource diversity, existing network capacity, impacts of network losses and network expansion options; and
 - scenario based analysis which considers an indicative timing for each REZ, likely efficient scale of generation development, and optimisation of interconnection and REZ and development.

³ AEMO, *Integrated System Plan Consultation*, December 2017, p.46.

- amendments to the AER's RIT-T Application Guidelines which:
 - establish a link between the modelling assumptions adopted in the ISP and those used in corresponding RIT-T assessments;
 - recognise that ISP scenarios are relevant for RIT-T assessments on ISP-identified projects, with flexibility to vary for local considerations or more up-to-date information;
 - allow the strategic development path provided by the ISP to inform the base case for RIT-T assessments of ISP-identified projects; and
 - allow inputs, assumptions and options considered by AEMO in respect of an ISP-identified project to provide clearer focus to the identified need of the corresponding RIT-T assessment.

In ElectraNet's experience, achieving alignment and acceptance of key inputs and assumptions within RIT-T assessments of strategic developments presents a greater challenge than the scope of the RIT-T and the breadth of benefits that can be considered under the current framework. The above changes will provide stronger support for this moving forward.

Where a wider range of benefits do become relevant and material to a particular assessment, it may then be necessary to broaden the framework to evaluate the relevant projects, including guidance on the circumstances that may warrant government intervention or funding to facilitate specific investments, consistent with the recommendations of the Finkel Review.

This overall approach provides a balanced and timely way forward, building the features of the present framework, to ensure greater coordination of transmission and generation development into the future.

ESCRI Battery Storage Project

Energy storage is playing an increasing role in delivering both market and system security benefits. ElectraNet supports the position within Energy Networks Australia's submission that transmission connected batteries which are centrally dispatched and cannot drive transmission network augmentation should not face transmission use of system (TUOS) charges.

The AEMC's Discussion Paper identifies a number of large-scale energy storage facilities that have recently been announced or are seeking to connect to the NEM.⁴

ElectraNet's 30 MW, 8 MWh large-scale Dalrymple ESCRI (Energy Storage for Commercial Renewable Integration) battery storage project on the lower Yorke Peninsula is a notable addition. ESCRI represents the second big battery project in the NEM, and the first stand-alone grid scale battery connected to the transmission network.

On 30 April 2018, construction of the battery was completed, with commissioning and testing of the battery to commence following licensing and market registration processes, with full operation expected before the end of June 2018.

⁴ AEMC, *Coordination of generation and transmission investment Discussion paper*, p.43.

The battery will demonstrate the ability of a large-scale energy storage device to support islanded operation of a local regional power supply by working with AGL's existing 90 MW Wattle Point windfarm and local rooftop solar photovoltaic (PV) systems to provide back-up power in the event of an interruption to supply from the electricity network.

The battery will provide both regulated network services and competitive market services. The regulated network service benefits include:

- improved reliability for the lower Yorke Peninsula by supplying power for at least two hours following the loss of transmission supply, and longer if there is sufficient renewable generation available from Wattle Point windfarm and/or local rooftop solar PV; and
- fast frequency response to reduce Heywood interconnector constraints on imports and improve power system security by quickly injecting power into the grid following a disturbance.

ElectraNet will lease the battery to AGL who will also operate it to provide competitive market services. Since AGL will be the Registered Participant in relation to the ESCRI battery, AGL will be both a Market Generator and a Transmission Customer for the battery.

ElectraNet continues to share the learnings from this project through a Knowledge Sharing Reference Group, which comprises representatives from a wide range of groups and companies interested in the advancement of grid scale battery energy storage and renewable energy integration in the NEM⁵.

ElectraNet looks forward to further engagement with the AEMC on this review, and would be happy to discuss any aspects of this submission further.

Please direct any queries in relation to this submission to Simon Appleby in the first instance on (08) 8404 7324.

Yours sincerely



Rainer Korte
Executive Manager Asset Management

⁵ Further information is available at a dedicated ESCRI-SA website: <http://www.escri-sa.com.au/>.