

16 August 2019

Mr Jeremy Conway
Chief Executive
Infrastructure SA
GPO Box 2343
Adelaide SA 5001

Dear Mr Conway

RE: Infrastructure SA 20-year strategy discussion paper

As the owner and operator of South Australia's electricity transmission network, ElectraNet has a crucial role to play in the safe, secure and affordable supply of electricity to the people, businesses and communities of South Australia.

Our transmission network covers approximately 5,600 circuit kilometres, includes over 90 substations, and extends across a service area of 200,000 square kilometres. The transmission network:

- Transports electricity over long distances from traditional and renewable generators – both local and interstate – to where it is needed to power customers across metropolitan, regional and remote areas;
- Facilitates competition between generation sources both within South Australia and across the broader National Electricity Market (NEM), ensuring that South Australian customers can access the lowest cost electricity supplies;
- Provides security of supply through access to a diverse range of supply sources; and
- Supports the safe, secure and reliable operation of the power system, including power quality.

The electricity network is an essential component of economic development in South Australia. In addition to connecting new generation sources to the grid, ElectraNet also plays an important role in strategically developing the network to ensure there is transfer capacity to cater for the planned growth in regional areas, and in supporting the broader transformation to South Australia's energy future.

Transmission costs represent around 8 per cent of a typical residential bill. As with most infrastructure, the most cost-effective solutions come from long-term strategic planning with an appropriate and stable regulatory environment.

ElectraNet welcomes the opportunity to make a submission to the 20-year State Infrastructure Strategy Discussion Paper and commends the South Australian Government and Infrastructure SA for undertaking this process.

South Australia's Energy Transformation

South Australia is at the forefront of energy transformation with world-leading levels of intermittent renewable energy compared with energy demand. System security and reliability are critically important as Australia's energy supply transitions to a lower carbon emissions future.

The way electricity is generated and consumed is changing. Customers are using, producing and valuing electricity in different ways and transforming electricity systems worldwide. This is seen in South Australia through a high and growing level of Distributed Energy Resources (DER) such as rooftop solar photovoltaic (PV) installations at customer premises, and through the continuing development of grid scale wind, solar and energy storage, progressing replacing our traditional coal and gas-fired generation sources.

Due to the changing generation mix, the Australian Energy Market Operator (AEMO) has identified a need for more storage and a greater reliance on transmission and interconnection between regions. This provides greater flexibility, security and economic efficiency across the NEM.

ElectraNet is responding to the challenges facing South Australia's changing electricity system in several ways including:

- driving industry leading innovative solutions that benefit consumers, such as the recently commissioned 30 MW ESCRI Battery Energy Storage System on the Yorke Peninsula;
- participating in the ongoing national conversation about energy transformation and engaging with AEMO, other transmission network service providers (TNSPs) and stakeholders in developing the next iteration of AEMO's Integrated System Plan (ISP);
- implementing a new interconnector between South Australia and New South Wales in partnership with TransGrid to deliver economic benefits to customers by better sharing of energy resources in the NEM, known as Project EnergyConnect;
- installing four large synchronous condensers to raise the existing cap on non-synchronous generation, and ensure ongoing system security with adequate levels of system strength, system inertia, and voltage control for South Australia's electricity transmission system;
- building a new transmission line that will improve reliability for customers on the Eyre Peninsula; and
- investigating potential challenges and solutions to ensure that South Australia can be operated as an islanded system, if needed in extreme circumstances, such as if interconnection to the eastern states is unavailable.

It is noted that some of the above mentioned projects are subject to regulatory approvals. Further information on how ElectraNet is responding to the future challenges facing South Australia's transmission network is contained within our latest *Transmission Annual Planning Report (TAPR)* issued in June 2019.

AEMO's Integrated System Plan (ISP)

ElectraNet has worked closely with AEMO to support the development of the first ISP in 2018. The ISP provides an overall 'roadmap' for the future development of the NEM transmission network and the connection of Renewable Energy Zones (REZs) over the next 20 years.

The ISP identifies priorities for the development of the transmission network as part of this over-arching long-term strategy, and ElectraNet's long-term network development plans and strategic development priorities are built on the ISP.

The development priorities identified in the ISP comprise the following:

Group 1: Near-term construction to maximise economic use of existing resources – *immediate investment in transmission should be undertaken, with completion as soon as practicable*. This includes ElectraNet's investment in synchronous condensers.

Group 2: Developments in the medium-term to enhance trade between regions, provide access to storage and support extensive development of REZs – *action should be taken now, to initiate work on projects for implementation by the mid-2020s*. This includes Project EnergyConnect.

Group 3: Longer-term developments to support REZs and system reliability and security – *in the longer-term, to the mid-2030s and beyond*. This includes targeted investments to unlock future energy sources including solar, wind and energy storage in South Australia.

AEMO currently intends to publish a draft of the next ISP by the end of 2019, with a final version to be published in the middle of 2020.

The ISP will inform South Australian businesses, industry and communities on the national plan for the development of transmission and REZs.

ElectraNet recommends the South Australian Government's 20-Year State Infrastructure Strategy considers the findings and prioritise set out in AEMO's ISP.

Resources and Skills

Timely delivery of the strategic investments required in South Australia's transmission network presents considerable resourcing challenges, at a time of growing demand for the required skills and expertise across the NEM as similar projects commence nationally.

ElectraNet remains focused on putting in place the required delivery strategies and skilled workforce and recommends the South Australian Government's 20-Year State Infrastructure Strategy addresses the skills and resources requirements to deliver the forward infrastructure priorities for the State.

Communications Network

ElectraNet owns an existing extensive telecommunications network across South Australia (second largest in South Australia after Telstra), which we predominantly use for protection and control purposes across the electricity transmission network. ElectraNet's telecommunications network has spare capacity, which could potentially be further harnessed to improve the availability and speed of data services across South Australian communities.

Cisco has forecast that global data usage will continue to double every two years, continuing the recent trend.¹ This is being driven by factors such as 5G rollout, streaming, and the Internet of Things (IoT). This indicates a growing need for additional telecommunications infrastructure and investment across Australia.

ElectraNet's network infrastructure will continually be upgraded over the next 20 years, keeping pace with ongoing technological change to support us remaining at the forefront of telecommunications across South Australia and continuously expanding our reach.

ElectraNet welcomes the opportunity to collaborate on ways we can best utilise our telecommunication network.

Case Study: Eyre Peninsula Line

ElectraNet has been actively exploring options to improve the reliability of supply to Port Lincoln, including options to replace or upgrade the transmission lines serving the lower Eyre Peninsula.

Our assessment of the line condition indicates that components of the line are nearing the end of their life and require replacement in the next few years.

However, we have identified that full replacement of the line is more cost-effective and will deliver greater benefits to Eyre Peninsula customers, improving supply reliability and capturing other market benefits.

In October 2018, we released the Project Assessment Conclusions Report (PACR), which is the third and final step in the RIT-T process.

The preferred option involves the construction of a new double-circuit 132 kV transmission line from Cultana to Port Lincoln, via Yadnarie, with the ability to upgrade the Cultana to Yadnarie section to 275 kV at a later date. The PACR found that this solution:

- increases reliability of electricity supply to homes and businesses on the Eyre Peninsula, reducing the frequency of outages;
- removes current network constraints, allowing the market to benefit from more low-cost energy from existing wind farms on the Eyre Peninsula;
- provides greater opportunities for new demand and renewable energy developments on the Eyre Peninsula compared to the current supply arrangement; and
- includes 'future-proofing' for cost-effective expansion of network capacity when needed in the future to accommodate potential larger mining developments and renewable energy investment on the Eyre Peninsula.

The *Eyre Peninsula Electricity Supply* project demonstrates clearly how a transmission line build (upgrade in this case) can provide increased reliability of electricity supply and promote economic and regional development in South Australia.

¹ Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2017–2022 White Paper, updated 18 February 2018, <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-738429.html>

Importantly, the investment is also expected to have minimal impact on electricity bills due to the offsetting savings delivered.

The RIT-T received regulatory approval in April 2019. The RIT-T commenced in 2016 and was published in April 2017. The project is expected to be completed in 2022. This highlights the importance of long-term planning for transmission projects.

We look forward to working with Infrastructure SA in the development of the State Infrastructure Strategy. For further information in the first instance please contact Chris Hanna on (08) 8404 7474.

Yours sincerely

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Steve Masters

Chief Executive