



**EnergyAustralia**

LIGHT THE WAY

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Dear Mr Klingenberg

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### **ElectraNet 2017, Market Modelling Approach and Assumptions Consultation Paper**

EnergyAustralia is one of Australia's largest energy companies with over 2.5 million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. We also own and operate a multi-billion dollar energy generation portfolio across Australia, including coal, gas, and wind assets with control of over 4,500MW of generation in the National Electricity Market (NEM).

We support ElectraNet consulting on this specific element of the Regulatory Investment Test – Transmission (RIT-T) it is undertaking as part of the SA Energy Transformation project. Given the potential for very significant investment to be made as part of this project, both in terms of dollar value as well as alteration to the backbone of the NEM's transmission network, it is appropriate for ElectraNet to seek as much stakeholder input as possible.

The RIT-T will require a level of market modelling that is much more complex by comparison with previous applications of the RIT-T for smaller network projects. A huge range of factors, which in many cases will not have applied to these previous investments, will need to be taken into account in this process to ensure that any investment meets the best needs of consumers. Each of the four network options proposed by ElectraNet will have very long asset lives and significant capital costs that consumers will have to bear. Given the transitional nature of the NEM at present, in terms of technology and government policy, any modelling will need to test investment options against a wide array of assumptions.

It is essential that the chosen option can be justified, using transparent analysis and assumptions, against a wide range of scenarios. Relying on best case or more optimistic scenarios is not appropriate; rather, any relevant investment decision needs to pass a test where the justification is robust and also holds up under less optimistic scenarios. The RIT-T standard requires that the recommended alternative must maximise the net benefits in the majority of cases considered when compared against a range of network and non-network alternatives. In our view, any project assessed through the RIT-T, that will impose significant costs on consumers, should not be marginal in its relative benefits. Rather it should clearly and unambiguously be proven to deliver significant market benefits regardless of the market outlook scenarios. To this end we provide the following feedback on ElectraNet's proposed modelling and assumptions.

***What do you think of ElectraNet’s proposed phased approach to assessing options? To what extent do you think this approach is appropriate for this situation?***

At a high level, the phased approach has some benefits. However, what is not clear is the basis on which the first-pass options will be screened and determined. The Market Modelling Approach and Assumptions Report does not provide sufficient clarity on relevant details, including what criteria will be used and how the ranking will be done. On what basis will options be prioritised, deemed “credible” or ranked as less than credible?

We have concerns that the benefits of certain options may demonstrate a great deal of variance across scenarios, and because we cannot know which scenario will best represent the future, the optimum option is unclear (almost by definition), unless it is compelling across all scenarios. Given this uncertainty, there is an increased likelihood that options that would become more credible under detailed modelling may be eliminated from consideration in the less rigorous modelling of the first phase. This is particularly the case when it is not clear what the system capacity is at present, given the ongoing variations to the network. This includes understanding the mechanisms (i.e. constraint equations) that currently limit power flows into and out of South Australia (SA).

Furthermore, by focusing just on market scenarios, the option ranking fails to assess the benefits of different options from delivering other benefits, such as ancillary services or the ability to improve liquidity in the contract market (which then leads to lower prices for large customers).

EnergyAustralia does not consider that resource and process constraints reduce the threshold for ensuring an adequate assessment is made. While we understand that not every possible option can be modelled, this should still not unreasonably limit the number of options considered as part of the detailed RIT-T analysis, especially if this places at risk the consideration of what may be identified as a prudent and efficient alternative.

***To what extent do you agree with ElectraNet’s assessment of the key variables expected to drive net benefits? Are there other factors that you think should be taken into account?***

A preliminary point to note is that it is unclear as to what horizon is being modelled in the scenarios. This is a fundamental point for ensuring the weighting of various assumptions.

Additionally, it appears that the method in the proposed solutions assumes that building an interconnector would allow the SA market to access “surplus low cost generating capacity that currently exists elsewhere in the NEM”<sup>1</sup>, thereby lowering the costs of supply. We consider that while that may have been the case in the recent past, it is unlikely to be the case in the future.

The notion that an interconnector taps into surplus baseload low cost capacity is not a compelling argument. The very circumstances that have led to SA having a higher price of electricity and problems with reliability may soon be replicated in the other states. For example, with the retirement of Hazelwood in March 2017, and the likely continued

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<sup>1</sup> PSCR p4

operation of the Portland Alcoa smelter, Victoria will no longer have any surplus generation capacity. There will also be around 2GW of New South Wales (NSW) black coal retirement about the same time as any interconnector would be energised, further reducing the capacity free to be imported by SA.

While this will largely be replaced by wind and solar due to the RET, it will come with the problem of intermittency. In essence, SA is at the forefront of the NEM in terms of penetration of renewables and retirement of baseload coal, but the rest of the NEM is not far behind. Interconnectors merely move the problem around, rather than solving it.

We consider that the High, Central and Low scenarios may not in fact be indicative of likely High, Central and Low market benefit scenarios. For example, taking carbon policies, a strong carbon regime will drive the NEM to become more broadly like SA (less baseload coal, more intermittent renewables) so the expected benefit could be lower. Similarly, a high coal price would drive a low market benefit for interconnects. The opposite would be true in terms of driving a higher market benefit.

An alternative methodology to running the three scenarios as suggested in Table 1 is to pick two key variables (preferably from the following: demand, gas price, coal price and capacity including retirements) and while keeping the other variables (eg Rate of Change of Frequency, Value of Customer Reliability, carbon pricing, new entry costs) constant prepare a two-by-two matrix to ascertain how the various options perform in a constrained range of circumstances. EnergyAustralia would be pleased to engage further with ElectraNet and/or the consultant modellers to discuss and outline this approach.

EnergyAustralia has extensive experience in modelling the interconnected NEM, using the PLEXOS tool. We have modelled many hundreds of scenarios over the past six years and use it extensively for forecasting and business planning. Based on this experience, we suggest that the key variables selected are a good start, but add there are other key variables that must be included which are not currently represented in Table 1:

1. Black coal price. The main determinant of prices in the NEM, post-Hazelwood's retirement, will be black coal utilisation and fuel price. Newcastle Free On Board is perhaps the best benchmark to use and historically it has varied widely. A high coal price will significantly impact the market benefits of any interconnector.
2. Capacity retirements. As noted above, the retirement of large baseload thermal plant in Victoria and NSW is an essential variable that must be considered. In particular, the timing of retirements at Liddell (2GW) and Vales Point (1.3GW) must be factored in. AGL has been explicit on Liddell's retirement date of 2022, but the retirement of Vales Point remains a major variable. Black coal capacity in Queensland in the next decade will also be of relevance. Given the long lifetime of the proposed network assets, these factors are likely to have a major impact across a substantial portion of the proposed network options asset life.
3. Deployment of storage. Over the course of a network asset's life the cost of battery storage is widely anticipated to come down significantly. This is expected to enable intermittent renewable generation to better match the required demand. The extent and pace of this decrease in costs will have a major impact on the requirement for balancing energy between regions. Note that a market model will typically solve for wholesale market conditions whereas substantial quantities of battery storage is being installed behind the meter to maximise benefits for customers of small-scale solar PV. A market model driven by lowest economic cost is likely to ignore the value of storage behind the meter. Unless this value is

accounted for any such model is likely to underestimate the deployment of storage behind the meter.

4. Gas price. Taking a closer look at the range between the proposed gas prices, the \$2/GJ range between high and low gas prices appears too narrow. Given the uncertainty around future gas prices and large impact of gas generation on modelled electricity prices (gas often being the marginal price setter), in our experience of modelling we would suggest a range of \$6/GJ between high and low gas prices would be more representative of this uncertainty.

We also suggest that other variables can be de-emphasised, such as cost of new entry. Since this is largely the same around the NEM because it is technology based, it is unlikely to have a material impact on market benefits from interconnection. It is more critical to clearly understand the parameters upon which ElectraNet will locate new entrants across the NEM. Additionally, the inclusion of the capital cost of new entrants appears to be too high across all three scenarios presented. The capital costs appear to be out of date and do not account for the downward trend in capital costs of large scale solar and wind projects seen in the last couple of years. Based on the assumed high costs, the model would calculate that few renewable projects would be built (if modelled on an economic basis).

***To what extent do you agree with ElectraNet's assessment of the key variables expected to drive net benefits? Are there other factors that you think should be taken into account?***

As per above, we consider coal prices and generator retirements need to be taken into account

EnergyAustralia also considers ElectraNet should be provide clarity on how it intends to deal with the following matters:

- The description of existing constraints affecting power flows between Victoria and SA on both MurrayLink and Heywood (i.e clarity around what the status quo outlook looks like);
- The prospect of introducing loop flows across the NEM, namely inter-regional flows between Queensland/NSW and SA, at the same time as having the existing interconnector with Victoria, and what this means in terms of market modelling and market benefits;
- The introduction of new fast-start plant (<2mins) that could turn on in SA and provide both ancillary service and energy services after a contingency. Such facilities would aid AEMO managing system security with the 30-minutes allowance it has, and may for example preclude the need for AEMO to procure regulation FCAS services in SA before an event;
- The relative weighting of scenarios and treatment of forecasts (such as 10%PoE, 50%PoE and 90% PoE summer and winter peak demands);
- The consistency of process and assumptions against AEMOs annual NTNDP studies framework;
- The probability of non-credible supply disruption (as well as the length) to be used in the propose envelope of scenarios;
- How the benefits of any network investment are affected by impending and ongoing changes driven by AEMOs Future Power System Security program, or the various AEMC reviews or Rule change proposals underway.

Given the criticality of this project, and the role of the RIT-T in selecting the option that provides the best outcome for consumers at the lowest cost, we support ElectraNet seeking feedback on this approach. We trust that the information provided above will be considered in finalising the modelling approach and assumptions. EnergyAustralia is available to provide further detail on the points made above, in order to ensure a rigorous and effective process is followed through this RIT-T.

If you wish to discuss any part of this submission please contact Chris Streets on (03) 8628 1393.

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