



31 August 2018

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Submitted via email: consultation@electranet.com.au

Dear Mr Korte

SOUTH AUSTRALIAN ENERGY TRANSFORMATION PROJECT ASSESSEMENT DRAFT REPORT (PADR) FEEDBACK

Origin Energy Limited (Origin) welcomes the opportunity to comment on ElectraNet's Project Assessment Draft Report which examines potential additional interconnection for South Australia.

At a high level it is vitally important that any regulatory investment test (RiT) examine all viable options, both network and non-network, that can ultimately deliver outcomes that are in the best interests of consumers. It is also pertinent to examine credible options that exist outside those identified in the AEMO Integrated System Plan (ISP). Origin supports a thorough RiT process and this should incorporate both the recommendations of the ISP and others that are relevant at the time of examination. Origin is encouraged by the current RiT that has examined a number of credible options and below we provide feedback on the options presented. However, there is a risk that future RiT's seek to expedite the decision-making process by examining only limited options identified in the ISP and this should be avoided.

Market modelling

ElectraNet's modelling appears to be silent on the development of Snowy 2.0, other than stating that only FID approved developments are considered. However, given the potential scale of the project and the implications for the market as a whole, Origin believes that there should be consideration of a Snowy or no Snowy option in the modelling.

There are some additional modelling assumptions within the PADR that Origin believes require further consideration including:

- It is assumed that the NEG is implemented, this should now be adjusted based on recent events.
- It is our understanding that much of the expected market benefits from the preferred option is contingent on the price differential between coal and gas. It is unclear however what consideration has been given to some legacy coal contracts coming to an end, and the consequent increasing linkage between international and NSW coal prices. Similarly, the impact of any potential LNG import terminals in the southern states is a reasonable scenario that should be considered given recent proposals for such projects.
- The modelling of OCGT generators within the PADR assumes slow start generators and ignores the potential benefits of fast start technology that is available from aero derivatives and reciprocating technology. These generators, especially in a 5-minute market which will operate from 2021, are likely to increase the efficiency of responding to price spikes. Accounting for these types of generators entering the market could affect the economics of the preferred interconnector option by lowering overall prices within SA.

Interconnector costings

Origin requests that greater clarity be provided on the pricing assumptions for the interconnector case(s). If ElectraNet's analysis has not already done so, some of the complexities of constructing large transmission projects should be accounted for, to ensure that market participants have as accurate a view of the costs as possible. Consideration should be given to:

- An allowance for contingency capex, e.g. if there isn't easy site access or good ground conditions
- Whether there are any native title issues.
- Development approval costs.
- Any required augmentations to the existing shared network to facilitate interconnection.

There is also an historical element that could be worthy of investigation. Twice previously there have been examinations of SA to NSW interconnection which have not been successful. Origin would encourage an examination of the reasons for these failures to be undertaken to determine if they remain relevant in the current environment.

Market benefit – avoided fuel costs

One of the largest benefits identified in the modelling of the preferred option is that of avoided fuel costs (Figure 7, p.81) by displacing gas fired generation through importing coal generation, predominantly from NSW and to a lesser extent QLD, which will result lower wholesale prices in SA. This is especially relevant during times when output from renewable generation sources is low or at times of peak demand.

In this scenario, extra generation from NSW or QLD will be required to support South Australian load across the interconnector. This raises the possibility of a price uplift in the exporting states as greater demand levels will move prices 'up the bid stack' and call on extra generation from coal sources or even NSW/QLD gas fired generators during higher demand levels.

Origin understands that costs will be split across SA and NSW, with SA liable for \$400m and NSW liable for \$1.1b. Given that NSW consumers will be responsible for nearly two thirds of the cost of the interconnector any potential for higher prices in NSW, at times when the state is supporting SA demand, should have a bearing on the economics and rationale of the preferred option.

Secondly, if coal plant in NSW or QLD retires earlier than anticipated, the reduction in wholesale prices, and subsequent benefit to consumers, will not occur for as long as modelled in the report. Indeed, the reduced benefit would occur earlier than modelled. The AER should examine how early retirement of coal assets could affect the economic viability of the preferred interconnection option.

Non-network options and additional generation

The additional report by Entura examines a suite of non-network options that would serve to maintain system security in the event of a credible contingency on the Heywood interconnector. This included a mixture of pumped storage, batteries, solar thermal and augmentation of the Murraylink interconnector. Origin questions whether additional gas fired generation investment should also have been included in this analysis and what effect this would have on the economics of the preferred option.

Generation within the State has the benefit of providing additional system security services such as inertia, system strength and voltage control. They are capable of providing energy and FCAS services during islanded scenarios and times of low wind output. Additional generation can decrease prices through greater competition for energy and FCAS services and relax constraints along the existing interconnectors.

Further consideration should be given to the benefits of additional fast start generators in either SA or NSW and the role they could play in allowing the State to meet price volatility that may arise under a high renewable penetration environment. A number of market participants have signalled their intention to introduce these fast start generation technologies and an additional interconnector will reduce the likelihood these units will receive further investment.

Additional interconnection to SA may also hasten the retirement of existing generation. A reduction in State based assets will come at a risk to system security, especially during islanded situations. Thus, it would be pertinent to examine the impact that additional connection will have on both new investment and early retirement of generators, especially as it relates to system security.

The PADR proposes a very specific set of arrangements to maintain system security in the absence of additional interconnection. This includes contracts with Cultana pump hydro and the Port Augusta solar thermal plant, two of the highest cost projects in SA, on a \$/MW basis. It is not clear in the documentation how far ElectraNet have gone to test other options that may bring down the capital cost of the non-interconnector option. Additionally, there are lower cost options that do not appear within the PADR such as an OCGT plant with a clutched synchronous compensation capability. Origin would welcome some broader, lower cost options, be tested to examine if an interconnector is the most economic outcome for consumers.

System strength and inertia requirements

Under the base case scenario ElectraNet have assumed that 2,400MWs of inertia is provided by synchronous condensers. AEMO's recent Inertia Requirements Report¹ states that SA requires a minimum threshold level of inertia of 4,400MWs and 6,000MWs of inertia to maintain a secure operating level. This would suggest that additional sources of inertia must come via generators within SA or interconnectors.

Origin questions what impact a new interconnector will have on system security and the need to maintain the minimum inertia requirement, especially in islanded situations. If a new interconnector hastens retirement of existing generators and reduces the likelihood of new generators being built then greater amounts of inertia will have to be sourced via additional synchronous condensers within the State. Additional condensers will come at a greater cost to consumers as they will be sourced by ElectraNet and passed through to consumers via its regulated asset base (RAB). Origin believes that this additional cost should be evaluated in any additional economic analysis of the preferred option.

Should you have any questions or wish to discuss this information further, please contact James Googan in the first instance via email james.googan@originenergy.com.au or phone, on (07) 3512 4138.

Yours sincerely,



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¹ https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/System-Security-Market-Frameworks-Review/2018/Inertia_Requirements_Methodology_PUBLISHED.pdf p.32