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Project Note

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| Subject | Response to South Australian Energy Transformation (SAET) Project Assessment Draft Report (PADR) submissions |

The responses below have been prepared by Entura in response to specific topics raised in submissions made to the SAET PADR.

Summary of Energy Australia Question 1

It is not clear if the Entura modelling has considered other market developments such as changes to the generator technical performance standards and the do no harm component of the managing power system fault level rule change. Entura has also not identified whether further fault level and or voltage regulation requirements will still likely be required adding additional costs to the interconnector option.

Response to Energy Australia Question 1

Entura investigated a non-interconnector option that does not involve a new interconnector. This planning study did not cover detailed connection requirements, which could only add costs to the non-interconnector solution. Doing so would further reduce the economic viability of this option.

In terms of further fault level and or voltage regulation requirements, we confirm that the base case includes synchronous condensers providing inertia, fault level and voltage regulation.

Similarly, Entura have not looked at future changes to the installed capacity of renewable generation since the system supports required to sustain these levels of installed capacity would, as Energy Australia suggest, would be included in a 'do no harm' approach to system strength management. It could be argued that this makes the non-interconnector solution even less valuable than the interconnector case, since the interconnector will increase system strength and reduce the need for some 'do no harm' supports.

Summary of Energy Australia Question 2

The solution technical performance modelling completed by Entura does not appear to cover a realistic range of scenarios and most cases fail to consider inter-regional energy flow pricing impacts and the implications around local generation dispatch.

Response to Energy Australia Question 2

Cases 1-6 of our studies were based on OPDMS snapshots, selected to have approximately the desired South Australian load, interconnector flow and wind generation levels (see table 4.1 of the Entura report, Consolidated Non-interconnector Option, dated 5 June 2018). The desired operating points were selected to define a technical envelope of likely power system operation including extremes of local inertia, extremes of interconnector flow and extremes of available wind generation. It is unsurprising that extremes of the technical envelope may not match the most likely operating conditions based on market optimisation.

It is worth noting that even in practice there are likely to be some occasional perverse operating states for the non-interconnector solution. For example batteries may need to charge during periods of relatively high price so as to be available in the event of an interconnector trip or to meet other contractual obligations. It is even possible that pumped storage may discharge while a battery charges, on similar lines.

Cases 7-10 have evolved from Cases 1-6 with the objective of demonstrating technical performance with little or no conventional generation in service.

Summary of Total Environment Centre Question

Do not agree with the conclusion that using batteries to inject power into the system, thus increasing supply, is likely to be more cost-effective than using demand response to reduce demand. Batteries are also more flexible in terms of providing other supports.

Response to Total Environment Centre Question

ElectraNet received one proposal that included demand response. The proposal received was from an organisation well positioned to provide demand response, at a competitive cost. The indicative cost provided by the proponent exceeded the cost of installing a battery with the same nameplate rating (by a large margin) and offered performance, in terms of speed, inferior to the response of a battery. The offer also included considerable ongoing costs.

Based on the lack of competitive proposals for demand response, the poor response speed of proposed demand response compared to the extensive proposals for batteries having good technical performance, it was concluded that demand response is not cost-effective compared to batteries.

Summary of Origin Energy Question

Query whether additional gas fired generation investment, specifically additional fast start generators in either SA or NSW, should also have been included in the Entura analysis and what effect this would have on the economics of the preferred non-interconnector option.

Response to Origin Energy Question

In the context of maintaining power system stability for an interconnector trip the supports are required to provide their support in less than 6 seconds and they are significantly more effective if this response can be provided in less than 1 second. In this context “fast start” generators are not fast enough to be useful.