



18 October 2018

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Re: Response to *Coordination of Generation and Transmission Investment*

1. INTRODUCTION

Infigen Energy (Infigen) welcomes the opportunity to provide a submission to the Options Paper prepared by the AEMC. Infigen has a 557 MW portfolio of wind capacity across New South Wales, South Australia and Western Australia and a further 113 MW of wind generation under construction in New South Wales. We are also developing a 25MW/52MWh Battery Energy Storage System (BESS) adjacent to our existing 278.5MW Lake Bonney Wind Farm in South Australia.

We are active participants in the energy market, delivering services to our large C&I customers using innovative mixes of renewable generation, demand response and hedging products.

AEMC's *Options Paper* is comprehensive and raises (and addresses) the relevant issues relating to transmission planning, within the scope of the review. As a broad principle, Infigen believes that while efforts to better inform and align generation and transmission development are important, a rigorous process needs to be applied before developing any regulated assets that risk locking consumers into long-term costs. The current frameworks provide appropriate signals for the efficient use of transmission and allow for new transmission to be developed when the need arises.

However, transmission access is only one factor driving the development and associated costs of a project. Site specific issues and costs (such as land cost, availability and suitability, road access, development approvals, environmental approvals, regional price forecasts, and the complexity of negotiating access with a monopoly) are also crucial variables. Therefore, care should be taken when interpreting (or implementing) the outcomes from least-cost models that necessarily cannot consider real, site-specific project costs and other competing factors.

2. MAKING THE INTEGRATED SYSTEM PLAN (ISP) ACTIONABLE

The ISP is a valuable resource, clearly identifying network constraints and highlighting a small number of example pathways for system development. It provides an informative guide for both generation and transmission, but (like all forecasts) will not necessarily reflect future conditions. Therefore, it is critical that individual projects are assessed as robustly as possible, including using realistic and specific project costs for proposed network upgrades.

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The AEMC has accurately described each of the options for making the ISP actionable and associated arguments. Infigen supports Option 1 (TNSPs must consider ISP identified needs in their TAPRs) noting that the work done on the ISP should be utilised as far as possible (and practical) by TNSPs to both reduce costs and help ensure a national focus. Infigen supports a coordinated national approach to assessing current and future potential transmission development requirements, particularly where this might help accelerate the decarbonisation of the economy.

Option 2 (TNSPs must conduct RIT-T on ISP-identified needs and options) is not without costs, and the near-term recommended projects are already being considered by TNSPs. If this option were to be pursued, it should target selected projects that would be commenced immediately if a RIT-T were to demonstrate benefit and restricted to interregional upgrades. A reasonable approach would be to promote Option 1 now, and consider implementing Option 2 if TNSPs are regularly not investigating near-term options proposed by the ISP.

Options 3 and above would place increasing responsibility on a single party to make investment decisions on behalf of consumers. Because of asymmetric information, AEMO is not best placed to be able to assess the more detailed aspects of physical transmission planning, the costs and constraints of real power projects, or have the time and resources to fully consider all network and non-network options:

It can be said that central planners, no matter how wise and no matter how well resourced, can be expected to make significant mistakes – because the problem has to do with information. The determination of lowest cost is a process that makes use of huge amounts of information, of such scale and scope as cannot feasibly be processed by a single decision-making unit such as AEMO.¹

As noted by AEMC, TNSPs would need to provide significant information to AEMO, and separate project-specific tests would likely be required. This may not be faster and could even be costlier.

We are also concerned that the ISP, as currently presented, considers a number of concurrent and subsequent projects in its assessment of the least-cost development pathway. This makes it difficult to assess the merits of any single project, including potentially making a project's value contingent on subsequent stages also being executed. Although using the ISP as a base case is not *necessarily* worse than a “no action” counterfactual², the more that multiple projects are contingent on each other for benefit the less robust that benefit is likely to be given uncertainty. These assumptions would be made explicit and be tested through consultation and sensitivities if Options 3 to 5 were implemented.

¹ Modified from Yarrow on regulation.

² And noting that RIT-Ts already have to make assumptions about future generation developments.

On this basis, Infigen does not support options 3 to 5. In all cases, transmission investment decisions (relatively low-risk investments for TNSPs) should be delayed until the last possible moment to minimise the risk of unnecessary or inefficient investment and allow for emerging non-network solutions (including large-scale and distributed energy storage and synchronous condensers) as well as generation alternatives. (Indeed, allowing transmission to follow generation would be the ultimate example of this.)

3. RENEWABLE ENERGY ZONES (REZ)

Infigen supports the work undertaken by AEMO in the ISP to identify areas of the grid with spare capacity, as well as highlighting potential bottle necks in the network. This analysis is a natural progression of AEMO's previous "wind bubbles", and provides valuable insight into the network.

However, in most scenarios and for most REZs, the ISP does not identify a transmission shortfall before 2030 or even 2040³. Also, as noted by the AEMC, a number of options already exist to support REZs. Therefore, it's not clear that immediate action on renewable energy zones are required. There are a significant number of existing proposed projects that can efficiently use the existing network, and it should not be necessary for AEMO or TNSPs to "pick winners" at this stage. The existing frameworks (specifically RIT-T) can be used to facilitate investment where it would be at lower cost to consumers. For example, the number of projects being developed in Western VIC suggests that this is a valuable area for renewable resource, and appropriate upgrades are being pursued *after* the commitment of projects, reducing the risk of inefficient transmission investment.

With the above caveats, it is possible that in the future an efficient transition to a high renewables system may benefit from enhanced coordination and funding approaches in specific areas, particularly when the upgrade is not simply of a spur line. For example, where unlocking a region of high renewable resource requires deep and non-local transmission upgrades, it is highly challenging to define and then assign costs of those upgrades to new generation⁴. This would prevent the application of Option 2 (Generators coordinating to build transmission), and Infigen does not support any implicit move towards generation being liable for deep connection costs. If compelling evidence was provided through the ISP or by the TNSP that transmission should precede generation for that REZ, there may be a role for speculative investment or prescribed services undertaken by TNSPs in such cases. To the extent that the existing frameworks prove insufficient, the AEMC has outlined a number of reasonable options.

³ An exception is Victoria, but appropriate studies are already underway (e.g., the Western Victoria RIT-T).

⁴ This was emphasized during the Optional Firm Access consultation, where it was necessary to determine the "brought forward" cost of any upgrades, and existing generation



4. TREATMENT OF STORAGE

From a power system planning perspective, energy storage increases the total efficiency of the generation plant stock (better utilisation of available energy through pumping, less peaking plant through generation). It would be expected that network efficiency is not adversely affected from pumping in that this should primarily occur in low price/low demand periods. Any attempt to recover sunk network costs during the pumping cycle will adversely affect the efficiency delivered by pumped storage technology.

Energy storage systems can also elect to connect as Market Customers liable for TUOS with the associated reliability standards, or negotiate connection agreements with non-firm load capacity (as it is with generation). There is likely little benefits in having firm charging capability but not firm generation capability, and so most storage systems will not require reliability driven network upgrades.

As such, Infigen considers it appropriate for energy storage system to be charged for the marginal cost of network use, and this is already captured by generation and load MLFs. Therefore, Infigen considers that not applying TUOS to storage would reduce complexity and uncertainty without materially impacting the efficiency of the system. Developers could still negotiate with TNSPs in their connection applications and would incur shallow connection costs as necessary.

Infigen would support a new registration category be created for energy storage, acknowledging that this could include significant hydro capacity. Currently, in many cases, Market Customer and Market Generator technical standards conflict, and Infigen has had productive discussions with AEMO in regard to our Lake Bonney Battery Energy Storage System. From an operational perspective, if a single registration category allowed for negative bidding (for load), it would be of great advantage and simplify operations. Note that AEMO's market management systems are currently only positive integer based and hence would require a significant upgrade to allow negative bids and potentially fractional dispatch.

5. CONCLUSION

Infigen looks forward to continuing to engage with the AEMC on these issues, and would be happy to further discuss any of the points raised in this submission.

Yours sincerely,

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