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Via electronic lodgement

Dear John

Approach Paper: Coordination of generation and transmission Investment (Ref EPR0052)

AusNet Services welcomes the opportunity to make this submission to the Commission's Approach Paper for its review into the Coordination of Generation and Transmission Investment.

We concur with the conclusion of the stage 1 report, that the conditions have arisen to review and recommend regulatory framework improvements to better coordinate generation and transmission investment. As discussed in the Approach Paper, each of the 3 criteria for the stage 1 review point to this need. The very significant amount of wind generation currently proposed for connection into the network in Western Victoria is particularly illustrative of 2 of the criteria, that is:

- *The drivers have changed significantly since July 2015:* in particular the new Victorian Government's policy and plans for a renewable energy target of 25% by 2020 and 40% by 2025; and
- *There is expected to be large amounts of transmission and generation investment:* over 5000MW new generation investment has already been proposed, and the required transmission capability to support this required new generation is also very substantial. The proposals represent a fundamental shift in the Victorian power system landscape.

As a case study, the Western Victoria network connection scenario highlights many of the issues canvassed in the Approach Paper. In particular:

1. The provision of sufficient transmission capability to serve generation needs is currently dependent on the TNSP determining a net positive consumer benefit from the required augmentation. This severely limits the generation proponent's assurance that the network will provide the capacity such that its plant can be dispatched. As the Approach Paper notes, TNSPs and generators have different incentives and priorities when making their respective investment decisions.
2. The framework does not cater well for the step change in generation investment in new locations that is being experienced. Previously renewables investment has been incremental and diversified, but the acceleration in investment plans now occurring is revealing very different implications. The new high renewable energy resource zones (such as in Western Victoria) do not have the transmission capability for the scale of generation already planned. Generators are smaller than those coal-fired plants they

are displacing, but they are numerous, and aggregate capacity of the renewables generation is necessarily much higher, for reasons of intermittent energy source diversity. The existing connection framework tends to be based around a sequential connection applications assessment approach, applicable to the infrequent connection of a new large scale generator. This is ineffective in the current circumstances, and costly. A mechanism which contemplates network investment to meet the aggregate needs for numerous smaller generator connections should be part of the transmission expansion framework.

3. The approach for generator led investment is unclear. Although not discussed in the Approach Paper, we note that generators may undertake a 'funded augmentation' to the shared network, and the SENE provisions provide for this. However this provides no certainty of market access to the generator due to free rider risk, and together with the strong tensions between generation proponents, they are reluctant to take this route. No developments using these provisions are evident. A load led alternative requires consideration.
4. There is no driver for prospective generation investment to factor into its business case the locational cost differences of shared network transmission augmentation, unless it is forced along the funded augmentation route. This is exacerbated by the iterative network augmentation planning process. For example, the Approach Paper suggests that AEMOs preliminary conclusions in its RIT process for Western Victoria is that "it may be more efficient to build new transmission lines closer to Moorabool ..."¹. Although unclear from the discussion, such a conclusion may impact generation plans, and cause change to align with transmission, but not necessarily the most cost effective overall solution, or satisfy deployment of all generation proposed for the zone. The process is too complicated and too time consuming to be effective in the circumstances.

Facilitating the connection of large amounts of new renewable energy resource in identified zones, by multiple generation proponents, should be a high priority for the review. This priority is necessary to achieve the energy transformation being led by climate change policy.

Several of the Finkel Panel recommendations are relevant to the review. The development of an Integrated Grid Plan should, when clearly established in the framework, provide a significant improvement in the information available to stakeholders on the overall grid development needs to provide a reliable electricity supply to customers, as the need for integration of renewable energy sources accelerates.

The remainder of this submission responds to the Commission's questions set out in the Approach Paper.

Question 1 Transmission charging arrangements – issues (a) Do you agree with the issues identified with respect to transmission charging, and how this impacts on the coordination of transmission and generation investment? (b) Are there any other issues that should be examined as part of this Review?

- We understand the issues identified are:
 1. Lack of any signal to generators of the costs they impose on the shared network due to their locational decisions;
 2. Uncertainty on transmission charging applicable to storage, and whether this has specific considerations relative to generators generally.
- We agree that these are matters that need to be addressed, and in the case of storage, clarified.

¹ AEMC, Approach Paper, page 18

- A locational price signal provides information to the market to enable the most efficient overall investments to be identified. All other location varying costs are capable of being included in the generator's investment choice, and the transmission investment variance may be significant. However, where the resource rich renewable energy zone is identified, and must be exploited to meet government policy commitments, the value of this signal is secondary to arrangements that will permit efficient deployment of the resource.
- The Approach Paper infers that there is no option for a generator to make a 'funded augmentation', however this option does not appear to be excluded in the current framework, and is the basis of the SENE arrangements. However, this approach is a failure in practice because of free rider issues and tension between competing generation proponents.
- How a generation price signal aligns with government policy direction will need to be considered by the Commission. Whilst a price signal to new generation would facilitate best investment outcomes, this places an operating cost on that new generation, substantially renewable generation, that existing generators do not face.
- Due to the smaller size of many renewable generation projects there is often opportunity for them to be connected via the distribution network. At the low end this includes micro-generation at the residential level, and at the high end in excess of 100MW. Distributed generation can impact on transmission connection assets which have regulated status, and potentially require augmentation. The intended arrangements for provision of transmission exit services, now impacted by entry characteristics, requires clarification. This embedded generation also contributes to shared transmission network augmentation needs for the renewable energy zone.

Question 2 Transmission charging arrangements - options (a) Are any of the above options worthy of further consideration, or no further consideration? Why? Why not? (b) Are there any additional options that should be considered through this Review?

- The options identified are:
 1. generators pay TUoS related to the firmness of service they receive.
 2. only storage facilities pay TUOS.
 3. any generator/storage pays TUOS when it is a net importer from the network.
- The distinct options appear to be around generation (injection of energy – option 1) contributing TUoS charges, and storage (withdrawal of energy – option 3) contributing TUOS. For the latter, a factor that should be considered is the potential for the battery to withdraw energy at a time when this supports additional generation at the same network location, hence contributing to the deferral of network investment. In that case, the battery should be penalised comparatively.
- The option of 'no price signal' for generators should clearly be the reference point. Quantitative analysis should conclude whether there is benefit in adopting a generator pays approach.
- As noted in response to Question 1, the funded augmentations arrangements, such as the SENE provisions in the Rules which were designed to facilitate connection of new energy zones, have not proven practical. Improvement to these arrangements should be considered so that they are implementable. For example, there may be improved generation investor confidence if TNSP charging arrangements require late comers to contribute to the costs of the transmission facilities (pioneer scheme).

Question 3 Transmission planning arrangement – Issues (a) Do you agree with the issues identified with respect to transmission planning, and how this impacts on the coordination of transmission and generation investment? (b) Are there any other issues that should be examined as part of this Review?

- The issues identified are:
 1. The lack of a price signal to generators is an information flow deficiency impacting coordinated planning.
 2. Where multiple generators wish to connect, such as in regions becoming identified as high capability renewable energy zones, the current framework falls down and the AEMC should develop approaches to implement scale efficient investments (paraphrasing the Finkel Panel quotes referenced in the Approach Paper).
- Issue 1 is common with considerations under questions 1 and 2, and is a recurring theme. It is clearly a high priority matter to be assessed. It is noted however, that the prospect of facing congestion should provide a signal to generators to consider the merit of locating where this is less likely. The value would need to be derived by the generator itself.
- Issue 2 is the critical paradigm shift question. We can no longer consider generation, and supporting transmission, investment decisions as incremental or sequential.

We acknowledge the view expressed by the Commission that it prefers market based solutions to centrally planned or mandated ones, as the alternative risks trade-offs being made between different objectives by governments on behalf of customers (page 13 of the Approach Paper). However, the market led approach is not effective in the circumstances of transition to renewables. The market cannot coordinate to achieve the necessary scale efficient augmentations necessary to connection significant new generation, and in a timely manner. The Finkel Panel recognised this issue, and the quote attributed to the panel in the Approach Paper (page 23) observes that there may be a future role for governments in facilitating considered and targeted investments in network infrastructure to enable the efficient development of renewable energy resources. A key reason for this proposition is the scale and speed of change that is occurring, driven by government policy announcements accelerating the transition to renewable energy sources.

These alternate views need to be reconciled in the Commission's considerations. We can appreciate the arguments associated with both points of view, however it is incumbent on the Commission to develop a framework which, one way or the other, is able to implement large scale investment that will support government transformational policy in the most efficient way, consistent with recommendation 5.1 of the Finkel Panel final report.

As discussed earlier, the SENE arrangements do not appear to have achieved any tangible outcomes since they were established in the framework. This appears to be because the output is limited to information provision only, and mechanisms for effective implementation are not addressed. There are no examples of the provisions being used. Generator proponents are competitors, and are incentivised not to collaborate. To the extent that they would collaborate, the investment risk would be borne exclusively by the foundation partners but the free rider risk is not removed. The work discussed above provides the opportunity to make these arrangements effective.

- We note that the Integrated Grid Plan currently being developed by AEMO in response recommendation 5.1 of the Finkel Panel final report is intended to facilitate the connection of renewable energy zones. This plan will undoubtedly provide much greater clarity of transmission needs, including investment to satisfy generation needs, compared to which the NTNDP is able to provide. The regulatory framework should be revised to fully incorporate the function and process of the Integrated Grid Plan. A high level of transparency of assumptions underpinning the plan will be necessary for it to be tested, for stakeholders to rely on it, and for linked plans to be developed with consistency.

Question 4 Transmission planning arrangements - options (a) Are any of the above options worthy of further consideration, or no further consideration? Why? Why not? (b) Are there any additional options that should be considered through this Review?

- The options identified are:
 1. Implement a price signal for generators, which would drive TNSP planning decisions
 2. Group prospective generators, to build slightly larger, more efficient connection assets
 3. Implement competitive renewable energy zones
- The scope of Option 2 should not be limited to Connection Assets. With the scale of generation envisaged the significant investment is in shared network capacity augmentation. Efficient, timely, and sufficient development of this component is essential if government objectives for the transition to renewable energy are to be achieved. Other enabling services for generation connection, such as the capability of the network's communications system to incorporate additional nodes, can present significant hurdles.
- The renewable energy zones that will rely on the national grid are already well defined. There is significant published research information on the premium renewable energy resource rich zones (for solar, wind and pumped storage). Proponents are already staking their claims for access to these resources, and so in the current NEM context this option cannot be characterised as a 'build it and they will come' approach. There is no mystery as to where transmission capacity upgrades are required, and the first version of the Integrated Grid Plan now in development will provide further clarity. Locational price signals for transmission are not as important in these circumstances, where this information is not material to the overall generation investment requirements.
- Our discussion under question 3 also has relevance to the options that may be considered to provide planning framework improvements.

Question 5 Transmission access arrangements – issues (a) Do you agree with the issues identified with respect to transmission access arrangements, and how this impacts on the coordination of transmission and generation investment? (b) Are there any other issues that should be examined as part of this Review?

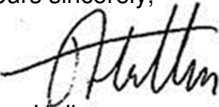
- The issues identified are:
 1. Generators have limited ability to manage exposure to dispatch uncertainty
 2. Whilst congestion has reduced, prospective renewable generation connections indicate that this will increase
 3. The impacts for generators could flow through to customers in higher prices
- Whilst congestion issues appear to have reduced in recent years, we concur with the Approach Paper discussion that indications are this issue will increase with prospective renewable generation connections. In the current circumstances there also alignment between the generators financial need for access to the market and the market's need for access to the prospective generating capacity at renewable energy hubs.
- The options identified are:
 1. Build out all congestion;
 2. Status quo open access;
 3. A common transmission reliability standard for all generators;
 4. An optional firm access model, or simplified version; and
 5. Full locational marginal pricing with firm access.
- The potential merit of alternative transmission access arrangements does not go away. Various there seems to be an initial case to explore options, but in the end there is always strong reluctance toward any of these alternatives.

- However, this should not preclude further exploration. If the case for change is shown to be strong and aligned to the broader government policy agenda of energy sector transformation to connect renewables en-masse, then broad support may be realised.
- Each of the options would need to be considered in their context. For example, the option of building out all congestion is clearly inefficient, as noted in the Approach Paper, however in the context of a new renewable energy zone accessing the market, and development of the zone depending on access, a centrally planned solution that tends in this direction may be necessary.

Our conclusion is that there is significant improvement needed in the manner in which transmission services serve new generation, and particularly in the circumstances of the massive shift in generation sourcing envisaged. Differentiation between this need and mechanisms suited to the more traditional incremental generation new developments appears necessary.

Please contact Kelvin Gebert, our Manager Regulatory Frameworks, if we can assist with any queries in relation to this submission. We look forward to opportunities to provide further input into the AEMCs considerations as the review progresses.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Tom Hallam', written in a cursive style.

Tom Hallam

General Manager Regulation and Network Strategy