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Mr Cameron Parrotte
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Via email: ISP@aemo.com.au

Dear Cameron

Integrated System Plan Consultation

AusNet Services welcomes the opportunity to make a submission into AEMOs consultation on preparing the 1st Integrated System Plan (ISP). The introduction of an ISP, with the first to be published in 2018, was a recommendation of the Finkel Review and accepted by COAG Energy Council.

However we note that the NEM regulatory framework does not yet accommodate the ISP, which will be necessary to provide effective mechanisms for implementation of its output. We discussed this need in some detail in our submission into the AEMCs consultation on Coordination of Generation and Transmission Investment, in September 2017.

In that submission we concluded that significant improvement is 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 large incremental generation developments appears necessary. In these circumstances, provision for multiple smaller generators and scale efficient network investment to lead generation investment is necessary. It cannot be expected that competing generation ventures are able to collaborate to establish the scale efficient network developments required for their collective dispatch and market access needs. We support AEMO in identifying the ISP as a 'system' plan. This emphasis is consistent with the intent of the Finkel Panel. The report emphasises system planning, for the plan to ensure security is preserved in each region as the generation mix evolves, and for AEMO to develop a list of potential priority projects to enable efficient development of renewable energy zones (page 12 of the Finkel Panel's Blueprint for the Future). Accordingly we support AEMO's objective for the ISP, being:

> *The first ISP in June 2018 will deliver a strategic infrastructure development plan, based on sound engineering and economics, which can facilitate an orderly energy system transition under a range of scenarios. This ISP will particularly consider:*
>
> - *What makes a successful renewable energy zone (REZ) and, if REZs are identified, how to develop them.*

- *Transmission development options*[1].

The remainder of our submission responds to AEMOs considerations for modelling as the initial priority. We intend to make a further submission on other aspects of the consultation by 28 February, in accordance with AEMOs consultation timetable.

Q1 The material questions the ISP seeks to address are in Section 1.3.1 of the consultation paper. Are there any other questions the ISP should address?

Section 1.3.1 of the Consultation Paper identifies an overarching question on the objective for the ISP. The question is "What is the best way to achieve the policy objectives of affordable, reliable, secure power and meeting emissions targets"? The question is broader than the objective proposed for the ISP (which we have noted above), and therefore may not be helpful for the purposes of developing the ISP. We support the proposal by Energy Networks Australia in its submission[2], for an alternative question, as follows:

> *What is the optimal power system design to enable the connection of renewable energy resources, including through inter-regional connections, to deliver affordable, reliable and secure power in accordance with Australia's emissions targets?*

This alternative for the question is more directly focused on what the ISP is able to achieve, i.e., a plan for the power system itself. This phraseology also includes the consideration of interconnectedness and sharing in the diversity of renewable energy resources across the national electricity market (NEM).

The Consultation paper then poses a series of questions to be addressed through modelling for the ISP. In our view these questions capture the main considerations to be explored to arrive at an integrated system plan. We offer the following comments on these.

- What are the least-regret generation and transmission developments which are most robust to different futures?

  We support the least-regret approach proposed by AEMO and for this to apply to both generation and transmission. This will facilitate identification of an economically efficient power system response to the drivers of change in the sourcing of the NEM's energy. For example, the approach is likely to identify where synergies exist between high quality energy resources and their accessibility to major load centres or high capacity routes on the transmission system, and to support the power system more broadly.

- Could large-scale renewable generation in targeted zones provide an efficient solution for future power system development, and what storage and transmission investment would be needed to support such an outcome?

  Confirming this proposition will be achieved through assessment of scale efficiency in generation development, i.e. the REZ concept, and the storage requirements (both quantity and efficient solutions) needed to support the shift away from synchronous generation. The achievement of renewable energy sourcing targets of state governments should be explored in addressing this question. Least regret developments (the subject of the previous question) should seek to confirm whether scale efficient, coordinated development is economically most efficient to address the circumstances of transformational change being faced by the NEM

- What is the optimal balance between a more interconnected NEM, which can reduce the need for local reserves and take advantage of regional diversity, thereby more efficiently sharing resources and services between regions, and a more regionally independent NEM with each region self-sufficient in system security and reliability?

[1] AEMO, Integrated System Plan Consultation, December 2017

[2] AusNet Services is a member of Energy Networks Australia and has participated in the formation of its submission

These are important considerations, and the balance must be determined on an efficiency basis. There is no other intrinsic benefit in more or less interconnectedness. In this regard we suggest that the question be rephrased to include the term 'efficiency' in the final part, i.e. "… and the relative efficiency of a more regionally independent NEM …."

- To what extent could aggregated load shifting and price-responsive load management, made available through investment into distributed energy resources (DER), reduce the need for large-scale generation and transmission development to replace the existing generation fleet as it reaches end of life, while maintaining power system reliability and security?

  It is important to incorporate these broader influences of orchestrated DER that will influence the efficient level of large scale development. It should be noted too that DER includes significant renewable energy developments, potentially up to 100MW, connected via the distribution network. The likelihood of these developments, including in REZs, should also be considered in the modelling.

A final question posed for guidance in preparation of the ISP relates to resilience, to enable response to divergence from anticipated energy sector developments. The question seeks to consider the optimal balance between lowest cost pathway and capability to adapt to the actual energy resource distribution that arises. In our view this is an important consideration in least regret analysis. A least regret pathway may not necessarily be the lowest cost, but under a range of scenarios and accounting for realistic sensitivities, will be the most resilient and deliver preferable price and energy reliability for customers. Potentially the question could be more focused toward this objective.

Q2 The scenarios the modelling will use to inform the ISP are outlined in Section 1.4 of the consultation paper. Recognising the time limitations to produce the first ISP in mid-2018, are these suitable scenarios to address at a high level? Should these be expanded in more detailed analysis for future ISPs?

We support the approach proposed for scenario modelling. This includes the bookends scenarios of slow and fast change, and a neutral scenario. The approach presumes that the slow change is slower than the neutral approach, however this is not clear, and could be clarified. For example, in Table 1, considering economic growth and population outlook, is a 'neutral' projection stronger than a 'weak' projection? In respect of specific inputs:

- Large-scale demand side participation and distributed storage aggregation – we query whether the values in the slow and fast change scenarios should be interchanged
- Rooftop PV and battery storage installed capacity, and unit costs – we query whether these values should be the same for each scenarios, as proposed. The discussion in Chapter 2 of the Consultation Paper discusses these and other transformations occurring at the consumer end, but does not suggest that projections do not correlate with broader factors affecting development of the energy sector. The modelling assumptions likely understate the uncertainty in uptake of these technologies driven by price and external factors
- VRET – in the scenarios table the contribution of the VRET is consistent for slow and fast change scenarios, but this is a reduction from the neutral scenario. The rationale is not clear. Inclusion consistent with the government commitment would be more realistic for the fast change scenario
- Generation closures – the retirement of coal fired generation is not included in the scenarios. The consultation paper identifies a retirement profile based on a standard 50 year life for the assets. However, this profile may change considerably due to the emissions reduction trajectories or through commercial considerations independent of this. It is unclear how the modelling accounts for this uncertainty. The impact of

generation closures should be included in the scenarios, or the impacts otherwise assessed through the sensitivity analysis.

The consultation paper identifies specific sensitivities that will be considered. We appreciate that each of these are uncertainties, however both the need for Basslink, and the priority value of the Snowy Mountains resources for pumped storage, should appear in the prioritisation of projects arising from the modelling. For this reason we query whether they represent sensitivity parameters, however the extent to which decisions on them are made independent to the ISP may give them this status. AEMO should clarify that these prospective developments will also feature in the modelling outputs.

The orchestration of DER is also identified as a sensitivity. We note that DER uptake and aggregation of resources is accounted for in the scenarios and accordingly the additional uncertainty and more importantly the benefit that would arise from a high level of orchestration may appropriately be considered a sensitivity. However an implicit base level of orchestration will exist and should be identifiable in the neutral scenario.

The question also asks if the scenarios should be expanded in more detail analysis for future ISPs. We think it is essential that the scenarios develop based on understanding arising from the modelling for this initial ISP, and indeed, if the initial modelling highlights that additional scenarios are warranted, they could also be expanded in this round.

For the ISP to fulfil its objective, scenario modelling must be robust. The ISP will be relied upon as an authoritative assessment of power system needs and will be the reference point for investment planning, facilitating an efficient forward process to implementation.

We look forward to participating further in AEMO's development of the ISP. We would also be pleased to assist with any queries you may have in relation to our submission, and request that you contact Jacqui Bridge, our Networks Planning Manager.

Yours Sincerely,

Kelvin Gebert
Manager Regulatory Frameworks