Ms Audrey Zibelman
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Lodged online ISP@aemo.com.au

Friday 2/2/2018

Dear Ms Zibelman,

RE: Integrated System Plan Consultation (Questions 1.1 and 1.2)

ENGIE appreciates the opportunity to provide feedback on the Integrated System Plan (ISP).

ENGIE is a global energy operator in the businesses of electricity, natural gas and energy services.

In Australia, ENGIE has interests in generation, renewable energy development, and energy services. ENGIE also owns Simply Energy which provides electricity and gas to more than 630,000 retail customer accounts across Victoria, South Australia, New South Wales and Queensland.

Question 1.1

> **The material questions the ISP seeks to address are in Section 1.3.1. Are there any other questions the ISP should address?**

The value of a more interconnected system is not a fixed quantity and depends on a raft of modelling assumptions, modelling methodology employed and timeframes. As the planning/modelling horizon increases, these assumptions become progressively less certain. Network assets are long lived and their costs are recovered from customers irrespective of actual delivered benefits.

The ISP horizon is 20 years and it is essential that distinctly different scenarios are used to study potential futures as distinct from a set of sensitivities cast around a set of core (central) assumptions.

Transmission augmentations

Whilst a more interconnected NEM maybe be warranted under some assumptions, other assumptions and scenarios may render transmission augmentation uneconomic. Under the current regulatory arrangements, the cost of transmission is recovered from customers. Hence customers underwrite the risks of uneconomic investments in transmission. It is important that the IPS minimises the risks of uneconomic transmission being built and is focussed on creating/maintaining future optionality without incurring actual expenditure. Market signals and decentralised investment decision making is considered superior to imposed centrally planned solutions.

Recovery of long lived assets in transmission in the face of relatively short asset lives of renewable technologies is clearly problematic.

Additional questions:

a) *What is the risk and cost of over-investment in transmission in all of the scenarios and sensitivities considered? (ie the actual future is different to the scenario that potentially supports such transmission investment)*

b) *What risks are underwritten by the customer?*

Demand side response

As a matter of principle, aggregated load shifting and price responsive load management must be driven by price signals in the NEM. Specifically, demand side should not be able to access any additional revenue streams not also made available to generators. This is necessary to avoid market distortions (ie de facto capacity payments to some technologies) and economic inefficiencies. The ISP modelling must not be constrained to achieve some predetermined level of demand side response.

It must be also be recognised that load can and will respond to high electricity prices. The effect of the "least cost" modelling will be to subdue electricity prices, and hence demand side response. A modelling outcome delivering a low quantum of demand side response must be recognised as valid and economically efficient (ie a direct result of customer choice).

Additional question

What is the cost and potential benefit of the aggregated load shifting and price responsive load management?

Question 1.2 –

Section 1.4 – Scenarios ; 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 following the first high level ISP?

Electric vehicles (EV)

There is a lot of publicity regarding electric vehicles and it is understandable that a scenario including EVs be included in the study. However there are other alternatives to fossil fuels in the transport sector such as hydrogen and/or methane. These may be used in modified combustion engines or fuel cells.

The production of hydrogen using renewable generating technologies is possible using a range of technologies. The CSIRO catalyst technology to convert a mixture of hydrogen and CO_2 to methane is an important development. Methane could then be blended (or used neat) with conventional gas using existing distribution infrastructure and used in vehicles. The impact of such technology on the electricity sector would be quite different to those of electric vehicles with battery storage. It is important that these technologies be also tested by the ISP scenarios, not just the strength of EV uptake (ie as is the case in the neutral, weak and strong scenarios).

Additional question

What is the impact of other transport technologies on the electrical system?

Snowy 2.0

If this project goes ahead, it will have a major impact on the NEM in relation to additional capacity, large storage capability and the increased supply of ancillary services to the market. It is imperative to test the impact of this project in the planning scenarios on transmission requirements, distributed and large scale storage investments and peaking capacity developments.

Additional question

What is the cost and benefit of this project to the system?

Storage

The three scenarios documented in the ISP have a common set of assumptions to all scenarios in the following categories:

- Battery storage (Neutral)
- Grid scale storage costs (Neutral cost reductions)

- Small scale PV and distributed battery storage (Neutral cost reductions)
- Pumped storage doesn't appear in any of the scenario definitions. In addition, there doesn't appear to be a cost curve for pumped storage in the assumptions.

By holding these assumptions constant across all scenarios, the implication is that these assumptions are 100% certain. Clearly this is not the case and the variability of these assumptions needs to be captured by the scenarios to assess the potential impacts on the system and costs.

Storage has a large potential to impact network augmentations and system dynamics. Pumped hydro storage needs to be included as it is an existing technology that is relatively cheap and can provide a large/significant amount of capacity to the system. The IPS should indicate the most valuable locations for large storage to the system (on least cost basis).

Additional question

> *What is the cost/benefit of pumped storage on the electrical system?*

Government renewable targets

Reductions in CO_2 emissions by imposing constraints on specific technologies to enter the system have been repeatedly shown to be economically inefficient and costly. The ISP is ideally placed to provide impartial and holistic costing of these policies benchmarked against the least cost approach (capital and operating cost, for generation and transmission). The 2025 VRET scenario is good candidate for such an assessment.

Additional question

> *What is the cost/benefit of extended renewable energy targets?*

Demand side response and distributed generation

It is essential that any assumptions regarding demand side response are transparent, understandable and based on sound economics. Whilst it may be technically feasible to aggregate "behind meter generation and storage", it remains unclear if there are significant benefits to the system outside of the local distribution area. As a matter of principle, the benefits to the electricity system would need to exceed the costs of implementing and operating such distributed arrangement. It is important for the ISP to identify, quantify and cost such potential options.

Additional question

> *What is the cost/benefit of demand side response and distributed generation when compared to other options?*

ENGIE trusts this submission will assist. Should you wish to discuss our submission further, please contact David Hoch (Regulatory Strategy and Planning Manager) on 04 1734 3537.

Yours sincerely,

David Hoch
Regulatory Strategy and Planning Manager