

1 March 2021

Dr Alex Wonhas
Chief Systems Design and Engineering Officer
AEMO
Melbourne Vic 3001

Email: ISP@aemo.com.au

AEMO Issues paper– ISP methodology

Dear Dr Wonhas

Energy Networks Australia (ENA) welcomes the opportunity to provide a response to the Australian Energy Market Operator (AEMO) Issues Paper – Integrated System Plan (ISP) methodology.

ENA is the national industry body representing Australia’s electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia.

ENA recognise that AEMO will continue to engage on the ISP methodology over the next few months. This methodology would then form the basis of ISP development for up to the next 4 years and would apply to ISP updates and the 2024 ISP also.

Figure 1, Navigating the ISP process, shows the complexity of the process to ensure the most efficient transition from a few large fossil generators to a large volume of smaller, more widely distributed renewable generators. This transition is needed because the coal generators will retire either via old age or becoming uneconomic to run. To enable new generation to optimally locate there will be a need for transmission investment. Similarly, to accommodate higher levels of distributed energy resources (DER), distribution investment will be needed. Operability of the power system through this transition will be challenging. To the extent that active DER is helping to meet the supply/demand balance in the National Electricity Market (NEM), it is important that Distribution Network Service Providers (DNSPs) are also considered as an input to the Inputs, Assumptions and Scenarios Report.

In summary:

- ENA consider that the least *probability weighted average* regret should also be considered;
- Where funding arrangements for state-led transmission are in place then this needs to be part of the counterfactual and the development path options;
- The UTS work is unlikely to lead to precise outcomes, AEMO and Transmission Network Service Providers (TNSPs) could consider the sensible sequencing of projects and seek to smooth out the boom/bust concerns before a final ISP is published;
- ENA supports the move to seasonal generator ratings and encourages AEMO to, where applicable, also consider the use of seasonal ratings for transmission lines;
- The ISP should consider incorporating bottom-up scenario forecasts from DNSPs, with key criteria clearly aligned to assist in overall integration of forecasting models; and

- In considering the balance of large-scale generation and small-scale generation in meeting the supply/demand balance it will be important to ensure that the full costs of small generation and systems and augmentations costs are considered in addition to the operability of the power system over all conditions.

Improve the least - worst regrets

In assessing candidate development options AEMO propose considering the least cost options across the scenarios and the least - worst regret. ENA agree with AEMO that the least - worst regret does not always choose the option with the largest net average benefit. AEMO consider that allocating likelihood is subjective and could skew the optimal development path.

ENA consider that the least *probability weighted average* regret should also be considered in tandem. This provides better alignment with the Regulatory Investment Test – Transmission (RIT-T) and scenario weightings undertaken by the TNSPs.

Credible counterfactual development path

The counterfactual has no future network development other than committed and anticipated ISP projects or small intra-regional augmentations and replacement expenditure projects. The counterfactual case is meant to consider the development of the system without any transmission augmentation so that the additional value of augmentations can be considered. In developing the counterfactual AEMO proposes that it only include existing intra-regional transmission capacity – no Renewable Energy Zones (REZ) development beyond existing transmission access allowed. Government policies, outside of the ISP, are planning on significantly increasing renewable generation in their states and are likely to need to augment existing transmission (or distribution) networks to meet system demand. Given the likely level of activity outside of the ISP, there is a need to consider credible levels of both generation in REZs and transmission. Where funding arrangements for state-led transmission are in place then this needs to be part of the counterfactual and the development path options.

Infrastructure delivery - Resource smoothing

AEMO notes that there could be a general tightening of the market for both labour and materials where multiple large transmission projects overlap and this can lead to increased costs for building transmission. There is no doubt that to connect the significant pipeline of generation projects there will be a need for transmission. The market is moving fast and state based policies and the regionalisation of the NEM will further exacerbate this. As AEMO note other large infrastructure road, rail etc could also be utilising resources needed to deliver the transition to lower carbon emissions. The tightening of the market is not just for ISP projects, it extends to business as usual activities such as replacement works, increasing costs.

AEMO notes the work being undertaken by University of Technology Sydney, Infrastructure Australia to deliver a report on employment and material requirements for transmission and generation under the ISP. Estimation of jobs and materials and incremental changes by scenarios for future actionable ISP projects should not be considered a core component of the ISP. This is unlikely to lead to precise outcomes as regulatory and other processes can take variable timeframes to complete.

Rather than considering a just-in-time approach to transmission delivery with asymmetric risks for consumers if projects run late, there is an ability for AEMO and TNSPs to consider the sensible

sequencing of projects and seek to smooth out the boom/bust concerns before a final ISP is published. If certain large ISP projects are to be implemented slightly earlier or kept warm in case certain triggers are met then this will need to be funded.

Funding and anticipated generation

ENA welcomes improving the clarity of anticipated generation. There is merit in considering government awarded funding in the anticipated project criteria although we have some concern on the level of support that may be considered as having met this criteria.

Sub-regional modelling supported

ENA supports the sub-regional approach being proposed and encourage AEMO to continue to look for opportunities for the detailed long-term modelling of the power system which will minimise iterations between time sequential modelling and detailed long-term modelling.

Seasonal Ratings

ENA supports the move to seasonal generator ratings and encourages AEMO to, where applicable, also consider the use of seasonal ratings for transmission lines.

Distribution Network considerations

ENA and the DNSPs have welcomed the opportunity to engage with AEMO on the 2022 ISP. However, we note that the identified values attributed jointly to DNSPs and AEMO (page 35) were not endorsed by DNSPs and represent an AEMO-only view. Engagement with AEMO is ongoing and we look forward to exploring the potential role for DNSPs in developing the ISP and agreeing the key priorities for future collaboration.

ENA agrees that DNSPs will and should be increasingly involved in the long-term planning of the NEM. For example, in considering ISP REZs or state government policy identified REZs, better coordination between DNSPs and AEMO when connecting and dispatching large renewable generators will be required. Collaboration with NSPs is key to ensuring successful outcomes and ensuring each party delivers according to their expertise namely, NSP in local network planning and AEMO general system security.

Design and planning of the distribution network is exponentially more dynamic and complex than the bulk transmission system. AEMO should seek to leverage the knowledge and expertise of DNSPs. We also note that the regulatory investment test for distribution does not support the ISP framework and therefore identification of specific “actionable” projects is not required. DNSPs see no compelling reason for this to change.

ENA also supports improved forecasting via the use of sub-regions and leveraging the knowledge of local NSPs. The ISP should consider incorporating bottom-up scenario forecasts from DNSPs, with key criteria clearly aligned to assist in overall integration of forecasting models. This would be an effective way to contrast scenarios and identify any significant departures or trends (customer technology choices).

ENA recognises the increased need for data, but to avoid inefficient and ad hoc effort, any data requests to DNSPs need to be proportionate and material to the primary ISP scope, which is related to transmission or large-scale generation requirements. ENA look forward to working with AEMO on

approaches that minimise the effort required to deliver data, while supporting improved understanding.

It may be useful to explore with DNSPs how the ISP methodology might deal with bookend and central possibilities on DSO capabilities being implemented over the next 20 years, in context of the transmission requirements. Some of the key DER settings in the ISP Inputs, Assumptions and Scenarios Report will be influenced by degree of DSO capability implemented. In considering the balance of large-scale generation and small-scale generation in meeting the supply/demand balance it will be important to ensure that the full costs of small generation and systems and augmentations costs are considered in addition to the operability of the power system over all conditions.

In addition, long-term penetration of DER is also heavily influenced by network tariff reforms, dynamic operation, control capability, market evolution and battery use. It may be useful for AEMO to consider these matters as part of the ISP methodology.

Should you have any queries on this response please feel free to contact Verity Watson, vwatson@energynetworks.com.au.

Yours sincerely,



Andrew Dillon
Chief Executive Officer