Ref. **A469913**

28 May 2021

Attention: Dr Alex Wonhas

Australian Energy Market Operator (AEMO)

By email: *ISP@aemo.com.au*

Dear Alex

POWERLINK QUEENSLAND RESPONSE TO 2021 DRAFT ISP METHODOLOGY

Powerlink Queensland (Powerlink) welcomes the opportunity to provide input to the Australian Energy Market Operator's (AEMO's) 2021 Draft ISP Methodology. Powerlink acknowledges the fundamental importance of fit for purpose inputs as the basis of analysis. Powerlink routinely provides feedback as an active member of the joint planning processes with AEMO, including participation in workshops and reference groups. This public submission focusses on 3 key inputs:

1. Short-term modelling assumptions and associated risks
2. Disaggregation of the long term model into a sub-regional model
3. Commitment criteria for anticipated projects.

These matters are addressed in more detail in the attached submission.

If you have any questions in relation to this submission or would like to meet with Powerlink to discuss this matter further, please contact Cameron McLean.

Yours sincerely

Stewart Bell

Stewart Bell

Exec GM Network & Business Development

Enquiries: Cameron McLean
               Manager Network Planning
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1. Short-term modelling assumptions and associated risks

Outputs from the ISP modelling are used as inputs to other planning assessments, reports and recommendations by AEMO. Of particular importance are the Network Support and Control Ancillary Services (NSCAS) and System Strength and Inertia reports. The NSCAS report has a 5-year outlook whereas the System Strength and Inertia report assesses the associated needs over the coming decade. Both assessments by AEMO can declare gaps in critical security services and drive investment (network and/or non-network) by TNSPs to address these gaps. For efficient and timely delivery of any required TNSP remediation, the inputs to the ISP process, especially in the short-term (0 to 5 years), must be carefully chosen to reduce the risk. The inputs must also reflect operational data and current experience. If this is not performed prudently then solutions that should be identified and efficiently delivered in planning timeframes become system security operational issues where available short-term solutions (if they exist) may be insufficient and more expensive.
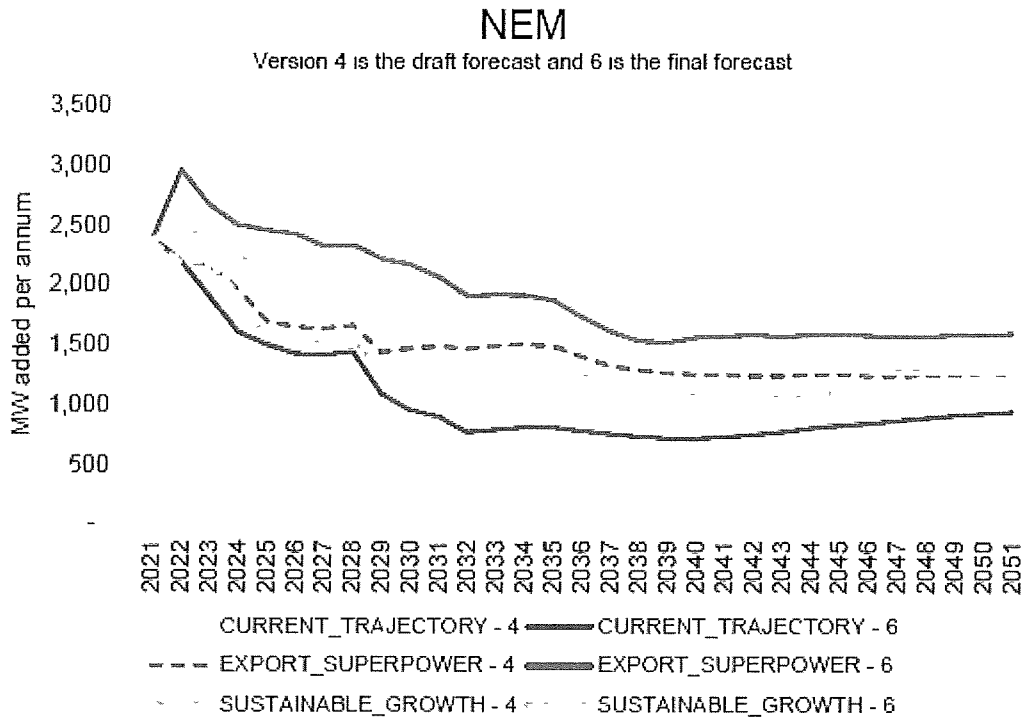
A critical assumption that has a large bearing on the early forecasting of these potential NSCAS, System Strength and Inertia gaps is the forecast of minimum demand and its impact on the operation of coal fired generators. AEMO recognises that market modelling cannot fully reflect the decisions made by the operators of the plant. The AEMO economic algorithm that makes long-term mothball/retirement decisions does not take into account how the plant may be operated in the short-term and may under represent the potential NSCAS, System Strength and Inertia gaps.

In Powerlink's submission[1] to the 2021 Input Assumptions and Scenario report the difference between actual and forecast rooftop PV installation levels was highlighted. Our submission acknowledged that AEMO recognises that the *'short-term trends in installations* (i.e. rooftop PV) *and output are still problematic'*. Subsequent to this, the rooftop PV forecasts from two consultants, CSIRO and Green Energy Markets (GEM) have been shared, together with how these forecasts will be used in preparation of the input data for the ISP scenarios.

The rooftop PV forecast prepared by GEM has only been shared in aggregate form for the NEM. The forecast is shown below for convenience and clearly shows that the installation rate is forecast to peak in 2021, and drop sharply thereafter, under the Central scenario. Given the month on month installation rates in Queensland continue to be exceeded, Powerlink reiterates that even using these revised assumptions will likely under represent the decline in minimum demand.

The rooftop PV uptake assumption is crucial when assessing the revenue adequacy and operation of existing generators and when evaluating the urgency and economic viability of energy storage and mix of large scale renewables. All have a significant impact on the ISP outcomes and the timing of the emergence of gaps in critical system security services.

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[1] At https //aemo com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2021/iasr/submissions/powerlink pdf?la=en

NEM
Version 4 is the draft forecast and 6 is the final forecast

CURRENT_TRAJECTORY - 4 ━━━ CURRENT_TRAJECTORY - 6

━ ━ ━ EXPORT_SUPERPOWER - 4 ━━━ EXPORT_SUPERPOWER - 6

- - SUSTAINABLE_GROWTH - 4 - - - SUSTAINABLE_GROWTH - 6

Source 28 April 2021 FRG meeting 4 – meeting pack, Presentation 1 - 2021 PV and Battery Forecasts - GEM.pdf, page 7 [2]

Powerlink acknowledges the uncertainty in the forecast for rooftop PV installations. There are many variables (such as environmental, economics, etc) that impact the future rooftop PV decisions of consumers. Hence, Powerlink considers that this uncertainty would be best accommodated by testing a sufficiently wide spread of potential rooftop PV futures. At a minimum the ISP should have some sensitivities that reflect the ongoing growth and/or stabilisation of rooftop PV installations for the next few years, in order to understand the implications of this credible future, and to stress test the ISP development path.

Continuing to only forecast at the reduced levels increases the risk that resulting power system issues and consequences will first be observed in the operational rather than the planning timeframes This denies the timely identification of efficient solutions.

2. Disaggregation of the long term model into a sub-regional model

Powerlink is pleased to see the enhancement to include a more granular capacity outlook model representation. This allows greater alignment with the physical characteristics and limitations of the network and provides visibility of intra-regional limitations to power transfer, better allowing for the optimisation of inter-zonal network augmentations.

The inclusion of zones presents an opportunity to model these with more accurate inter-zonal loss flow equations rather than the current approach of a single static Marginal Loss Factor (MLF) invariant over the 20+ year study period AEMO considers that inter-regional losses alone are

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[2] At https //aemo com au/-
/media/files/stakeholder_consultation/working_groups/other_meetings/frg/2021/frg-meeting-4-
pack zip?la=en

reasonable or alternatively a sub-regional approach to capture losses is not seen as providing a material benefit.

In Powerlink's experience the modelling of losses does present a material impact on the least-cost generation planting and transmission development path. The incorporation of a more accurate loss model captures the real market signals that MLFs pose to new entrants, resulting in improving the market benefit case for certain transmission alternatives (for example HVDC) which would otherwise appear less competitive. Powerlink's insights into the materiality of this modelling enhancement has come from recent market modelling, the details of which Powerlink would be happy to share with AEMO.

3. Commitment criteria for anticipated projects

Powerlink acknowledges the challenge of an appropriate transition point between the known higher certainty generation projects and allowing the market modelling optimisation algorithm determine the future generation projects Shorter-term plans become less volatile to new generation commitment and policy if a greater number of the future generation projects are captured as input. As outlined in the first point on short-term modelling, it is important that sensitivities are performed where investments are highly dependent on such assumptions. Whilst the question of including lower certainty anticipated projects is a difficult one, a choice must be made. Powerlink supports the inclusion of anticipated projects where in AEMO's and TNSPs' professional opinion the project is likely to proceed.

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