

27 November 2018

Mr. John Pierce
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

FROM THE OFFICE OF THE
CHIEF EXECUTIVE OFFICER

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Dear Chairman Pierce,

Last Resort Planning Power (LRPP) request for information – expected inter-regional constraints

This is in response to your letter dated 21 November requesting confirmation from AEMO on expected inter-regional constraints required to be addressed by the relevant Transmission Network Service Providers (TNSPs).

The 2018 ISP prioritised NEM developments required over the coming 20 years, identifying two inter-regional transmission limitations as part of the Group 1 priority projects, i.e. needs required to be addressed most urgently. We note for the purposes of your review that work is underway on all these potential transmission projects including recently the:

- New South Wales to Queensland interconnector upgrade (minor and major upgrades)
- Minor Victoria to New South Wales interconnector upgrade

Additionally, your letter notes the following points in relation to the analysis required to be undertaken as part of the AEMC's LRPP function:

- The information used to form the basis of the table was gathered by your staff from AEMO's 2016 NTNDP, as well as recent email correspondence between staff from both organisations;
- AEMO's inaugural 2018 ISP, which was published in place of the 2017 NTNDP, is a high-level system plan and contained less detailed information on expected inter-regional transmission constraints than that published in previous NTNDPs, highlighting examples of such information;
- Assessment of transmission inter-regional constraints in the NEM and the projects that could address these constraints has used AEMO's 2016 NTNDP, 2018 ISP and 2018 transmission annual planning reports (TAPRs) – along with further clarification from AEMO staff on the detailed information that was traditionally provided in NTNDPs.

It is important to clarify that AEMO's 2018 ISP is more than a high-level system plan – it improved and expanded on the approach used in previous NTNDPs involving detailed and rigorous engineering analysis and market modelling that therefore delivered higher quality and more robust results. Further, the ISP did not omit any information that is required in an NTNDP as specified in section 49(2) of the National Electricity Law (NEL) as well as clause

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5.20 of the National Electricity Rules (NER). Prior to preparation and publication of the 2018 ISP, a thorough review was undertaken to ensure these requirements were being met.

In relation to information required for the AEMC's assessment as part of its LRPP function¹, it can be confirmed that the information requirements of this provision have all been incorporated throughout the ISP, its corresponding attachments and appendices including:

- The ISP executive summary;
- Chapter 6 of the ISP;
- Appendix D of the ISP;
- The ISP database, including:
 - the 2017 Network Flows and Congestion Data worksheet which references congestion information resources relevant to expected inter-regional transmission constraints; and
 - the interactive map.

Further, the ISP document has been presented in a different format to previous NTNDPs, and some information has been published using different terminology, although providing the same intent or meaning as that used in NTNDPs. We recognise that as a result of the changes there may be potential for confusion for stakeholders searching for specific information in the form it had been presented in the past.

However, the Commission can be assured that all required information was made publicly available and that the supplementary information provided by AEMO staff on request by the AEMC staff was obtained promptly and from resources published as part of the ISP. In addition, attached to this response is a changed marked table that specifies the location in the ISP and associated material of the information that is required to be in the NTNDP. We would be happy to provide further assistance in sourcing information should that be required by your officers.

Should you have any queries on the matters raised above or on AEMO's amended table attached please don't hesitate to contact David Swift, Executive General Manager Planning and Forecasting on (08) 8201 7371.

Yours sincerely



Audrey Zibelman
Managing Director and Chief Executive Officer

cc: David Swift, Executive General Manager Planning and Forecasting, AEMO
Brett Hausler, Executive General Manager Regulation and Governance, AEMO

¹ We believe this would be based on clause 5.20.3 of the NER

Richard Owens, Executive General Manager, AEMC

Attachments: Table 1 – Expected inter-regional constraints needed to be addressed by the relevant TNSP (Amended)

Table 1 – Expected inter-regional constraints needed to be addressed by the relevant TNSP (Amended)

TNSP(S)	2016 NTNDP (limitations)	2018 ISP (drivers for augmentation)	Supplementary information provided by AEMO staff in correspondence with AEMC
QNI TransGrid and Powerlink	Not listed. Table 3 (page 28) of the 2016 NTNDP – does include the upgrade options required to alleviate this.	Increase transfer between Queensland and New South Wales Appendix D.1.1 of the 2018 ISP presents detailed drivers for the need to increase transfer capacity, as well as details of the upgrades required in order to alleviate current limits.	Flows towards Queensland are limited by a voltage collapse limit on loss of the largest generating unit in Queensland Queensland to New South Wales import is limited by the transient stability limits for fault on either a Bulli Creek-Dumaresq or Armidale-Dumaresq 330 kV circuit
QNI TransGrid	Transmission limitations between 330 kV lines between Dumaresq and Bulli Creek (part of the NSW-QLD interconnection). Transient stability limits set the exporting limit from QLD to NSW Transmission limitations between 330 kV lines between Dumaresq and Liddell		Flows towards Queensland are limited by the thermal capacity of Liddell-Muswellbrook-Tamworth and Liddell-Tamworth 330 kV lines
VNI AEMO	No relevant limitation identified. A network augmentation option for VNI was identified: a braking resistor at Loy Yang	Increased export from VIC to NSW Appendix D.1.2 of the 2018 ISP presents detailed drivers for the need to increase transfer capacity, as well as details of the upgrades required in order to alleviate current limits.	Flows towards New South Wales are limited by the transient stability limit for a 2 phase to ground fault on a South Morang - Hazelwood 500 kV line
VNI AEMO	Transmission limitation on South Morang 500/330kV transformer		Flows towards New South Wales are limited by the thermal capacity of the South Morang 500/330 kV transformer
VNI AEMO	Transmission limitations on Dederang - South Morang 330 kV circuits		Flows towards New South Wales are limited by the thermal capacity of the Dederang - South Morang 330 kV
VNI TransGrid	Transmission limitations on 330 kV cutset between Yass/Canberra and Sydney		Flows towards New South Wales are limited by the thermal capacity of the Upper Tumut-Canberra 330 kV line
VNI TransGrid		NSW coal-fired generation retirements and increased generation in SNSW, Murray and Riverland REZs and increased import from VIC	Victoria to New South Wales export is limited by transmission limitations on the Sydney to Canberra/Yass 330 kV corridor during times with increased generation in southern New South Wales
VNI AEMO	Transmission limitations on Eildon-Thomastown 220 kV line	Increased import from NSW to VIC at times of high demand periods coinciding with high ambient temperature	New South Wales to Victoria import is limited by thermal capacity of the Eildon-Thomastown 220 kV
VNI AEMO	Not listed. Not identified as a material limitation in the scenarios modelled		New South Wales to Victoria import is limited by thermal capacity of the Murray-Dederang 330 kV

VNI AEMO	Transmission limitations on Dederang - Mt. Beauty 220 kV lines	Not-listed The proposed Victoria to New South Wales upgrade outlined in Appendix D.1.2 of the 2018 ISP addresses this limitation.	Additional clarification not listed requested
Heywood ElectraNet	Transmission limitations on the Tungkillo-Tailern Bend South East transmission corridor	Not-listed The proposed SA to NSW upgrade is projected to reduce the impact of this limit. This is discussed in Appendix D.1.2 of the 2018 ISP, and supplemented by information in the TAPR Summary spreadsheet (item 4.3 and 8.5.3 on ElectraNet APR tab).	Additional clarification not listed requested
Heywood ElectraNet	Not-listed New interconnector options to South Australia noted in detail, for example Table 3, and section 3.2.1 and 3.2.2	Not-listed The 2018 ISP notes the need to expand the capacity of interconnection for South Australia for a number of reasons, not just for thermal capacity – see Appendix D.1.3 of the 2018 ISP for details.	VIC to SA transfer in both directions is limited by the existing Heywood and Murraylink interconnectors
Murraylink ElectraNet	Transmission limitations on the 132 kV network in the Riverland region	Not-listed The 2018 ISP TAPR Summary spreadsheet outlines committed projects to address these limitations – these were considered in the ISP (item 8.5.1 on ElectraNet APR tab).	Additional clarification not listed requested
Murraylink ElectraNet	Not-listed New interconnector options to South Australia noted in detail, for example Table 3, and section 3.2.1 and 3.2.2	Not-listed 2018 ISP notes the need to expand the capacity of interconnection for South Australia for a number of reasons, not just for thermal capacity, – see Appendix D.1.3 of the 2018 ISP for details.	VIC to SA transfer in both directions is limited by the existing Heywood and Murraylink interconnectors
Basslink TasNetworks	Transmission limitations on the Palmerston Sheffield 220 kV line	Second VIC-TAS IC and/or Wind Generation in NWTAS Noted in the 2018 ISP in table 44, Appendix D.3.4.	VIC to TAS transfer in both directions is limited by the existing Basslink interconnector
Basslink TasNetworks	Transmission limitations on the George Town-Sheffield 220 kV line	Not-listed The MarinusLink project outlined in the ISP considers all limits between Tasmania and Victoria. – see Appendix D.1.4 of the 2018 ISP for details	Additional clarification not listed requested

Basslink TasNetworks	Voltage collapse at George Town	Committed upgrades also listed in the 2018 ISP TAPR Summary spreadsheet (item 6.2.2.3 on the TasNetworks tab) Not listed Listed in the 2018 ISP TAPR Summary spreadsheet (item 6.3.2.1 on the TasNetworks tab). Noted as considered in NSCAS, discussed in the 2018 ISP Appendix C.1.4	Additional clarification not listed requested
Basslink TasNetworks	Transient over-voltage at George Town 220 kV	Not listed Considered in NSCAS, discussed in the 2018 ISP Appendix C.1.4	Additional clarification not listed requested
Basslink TasNetworks	Basslink inverter commutation instability due to low fault level at George Town 220 kV	Not listed Considered in NSCAS, discussed in the 2018 ISP Appendix C.1.4	Additional clarification not listed requested
Basslink TasNetworks	High rate of change of frequency (RoCoF) - triggered by high wind generation in Tasmania and/or increased import from Victoria to Tasmania and reduced hydro units on line	Not listed Considered in NSCAS, discussed in the 2018 ISP Appendix C.1.4	Additional clarification not listed requested
Basslink TasNetworks	High rate of change of frequency (RoCoF) – Unavailability of existing FCAS services with retirement of smelters in Tasmania	Not listed Considered in NSCAS, discussed in the 2018 ISP Appendix C.1.4	Additional clarification not listed requested