AEMC

REVIEW

Australian Energy Market Commission

FINAL DECISION REPORT

Last Resort Planning Power: 2012 review

11 December 2012

Reference: EPR0030
Decision Report

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About the AEMC

The Council of Australian Governments (COAG), through its then Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. In June 2011, COAG established the Standing Council on Energy and Resources (SCER) to replace the MCE. The AEMC has two principal functions. We make and amend the national electricity, gas and energy retail rules, and we conduct independent reviews of the energy markets for the SCER.

Summary

The National Electricity Market (NEM) comprises five regions that have interconnected transmission networks. Enabling the flow of electricity between regions is critical for the efficient and reliable operation of the market as a whole. Investment in interconnectors and the regional networks that support them has the potential to ensure reliable supply for customers in the most cost efficient way, as well as allowing improved market efficiency through cross regional trading.

Each region of the NEM has its own transmission Jurisdictional Planning Body (JPB). Each JPB is responsible for undertaking transmission infrastructure forward planning within its region. In addition, the Australian Energy Market Operator (AEMO) as the National Transmission Planner (NTP) develops a strategic overview of the future transmission requirements of the NEM.

The National Electricity Rules (NER) allocate the Last Resort Planning Power (LRPP) to the Australian Energy Market Commission (AEMC). This is the power to direct a Registered Participant to undertake a Regulatory Investment Test for Transmission (RIT-T) to determine if a transmission project is warranted. The AEMC is to exercise this power if it considers that the JPBs are not giving due regard to a constraint on inter-regional flows. Each year the AEMC considers the documented planning actions of the JPBs and the NTP and reports on its reasons for either issuing a direction or not doing so. The AEMC is yet to exercise its power to issue a direction.

The Commission decided to use a three stage assessment to determine whether to exercise the LRPP. The first stage was to review the documented activities of the JPBs. This is compared to the analysis of potential future upgrades as determined by the National Transmission Network Development Plan as prepared by AEMO in its role as NTP.

The AEMC engaged the consultants Marden Jacob Associates to provide information on planning to resolve inter-regional constraints undertaken in the NEM in 2011-12.

The AEMC has determined that all inter-regional flow paths are being adequately addressed, as summarised in the table below.[1] As a consequence, the Commission will not proceed to stages 2 and 3 of the assessment and will not issue a direction in 2012.

1 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, pESii

Inter-connector	Nominal Maximum Capacity	Finding	Timeframe
QNI	NSW-Qld: 400 MW Qld-NSW: 1078 MW	Work is being undertaken to address uneconomic constraints on this interconnector. In June 2012 Powerlink and TransGrid published a Project Specification Consultation Report that presented a range of possible options.	Assessment draft report in mid-2013.
Vic to NSW	Vic-NSW: 3200 MW -Tumut Generation NSW-Vic: 1900 MW - Murray Generation	Various projects are being considered by TransGrid and AEMO and a preliminary feasibility study has commenced. A RIT-T has commenced to address increased NCAS to support greater transfers between NSW and Victoria.	Preliminary feasibility study being undertaken.
Heywood	Vic-SA: 460 MW SA-Vic: 460 MW	A RIT-T was initiated by ElectraNet and AEMO in June 2011 and a Project Specification Consultation Report was published in October 2011 that presents a range of options	RIT-T commenced June 2011 and PSCR published Oct 2011.
Murraylink	Vic-SA: 220 MW SA-Vic: 188 MW	Work is being undertaken examining options to increase capacity. NSW is to be included in the Murraylink Runback System.	RIT-T assessment by AEMO is pending.
Basslink	Vic-Tas: 478 MW Tas-Vic: 594 MW	The NTNDP did not signal any requirement to upgrade Basslink	N.A.

Contents

1 Introduction to inter-regional transmission

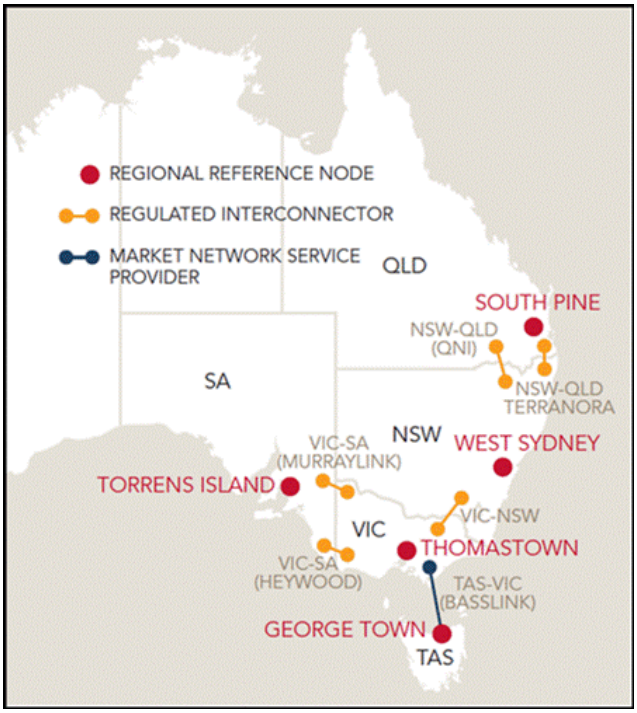
1.1 NEM transmission planning

The NEM is an interconnected network composed of over 40,000 km of transmission lines and infrastructure.[2] This is divided between five different jurisdictions as can be seen in Figure 1.1. Transmission planning within each of these jurisdictions is the responsibility of a Jurisdictional Planning Body (JPB). The JPB for each of these jurisdictions are as follows:

- New South Wales - TransGrid;
- Victoria - the Australian Energy Market Operator (AEMO);
- Queensland - Powerlink;
- South Australia - ElectraNet; and
- Tasmania - Transend.

The current interconnectors between the regions are shown in the below diagram.

Figure 1.1 Interconnectors in the NEM[3]



A JPB is responsible for the reliable supply of electricity over the transmission system to consumers in its region. To meet the reliability standards, the JPB plans future augmentations to the transmission network. These can include projects to remove constraints on inter-regional flow paths.

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2 Australian Energy Market Operator (AEMO), *National Transmission Network Development Plan*, 2011, p 1-2.

3 AEMO, *Introduction to Australia's energy market*, 2010, p15.

When any of these JPBs considers undertaking a transmission augmentation project, either to maintain reliability or deliver additional market benefits, which has an expected cost of over $5 million then it must evaluate the project by performing a Regulatory Investment Test - Transmission (RIT-T) assessment. A RIT-T assessment examines the costs and benefits of credible options and establishes the one that maximises net market benefits.[4]

The JPBs are responsible for publishing an Annual Planning Report (APR) by the end of June each year which examines transmission planning within its region and possible developments between regions. The National Electricity Rules (NER) set out the required information for these APRs.

In addition, AEMO as the National Transmission Planner (NTP) is responsible for developing a strategic overview of the transmission system. To facilitate this, the NTP must publish a National Transmission Network Development Plan (NTNDP) by the end of January each year. This document contains a national overview of transmission infrastructure in the NEM. It also examines constraints and potential future transmission plans to inform the JPBs planning processes. This document is focussed on providing a strategic NEM wide overview of future transmission needs.

The NTNDP published in 2010 included modelling of a number of scenarios for the next twenty years and potential impacts of these scenarios on the planning of transmission. This information was used to examine where potential future transmission augmentation may be necessary, including listing transmission network development for the first 10 years. The 2011 NTNDP focussed on updating the results of the 2010 NTNDP and not replicating the entire process. AEMO have indicated that the 2012 NTNDP will include models of 25 year scenario outlooks.[5]

1.2 Inter-regional transmission

The LRPP was allocated to the AEMC in response to a rule change proposed by the Ministerial Council on Energy (MCE) in 2005.[6] The MCE considered that the Code (the precursor to the NER) "provided no obligations for network businesses to maintain efficient transfer capacity between regions."[7] This rule change followed from recommendations in the MCE's *Report to COAG on Reform of Energy Markets* in 2003 which stated that the Last Resort Planning Power should be part of a national transmission planning regime.[8]

Concerns have been raised more recently by some commentators about the structure and effectiveness of inter-regional transmission planning. For example, *The Garnaut Review 2011: Australia in the Global Response to Climate Change* stated that "[i]t is highly

4 If the planned augmentation is to meet reliability standards then the preferred option may have a negative net economic benefit, in which case the RIT-T should identify the option which minimises the cost

5 AEMO, *2012 NTNDP and planning studies: Responses to consultation*, 2012.

6 MCE *National Electricity Rules- Rule Change Application: Last Resort Planning Power*, 2005.

7 MCE *National Electricity Rules- Rule Change Application: Last Resort Planning Power*, 2005, p1.

8 MCE, *Report to COAG on Reform of Energy Markets*, 2003, p10.

unlikely that a seamless national network can be built by five state-based transmission planners with parochial responsibilities."[9]

However we note that the Productivity Commission was recently given the task of examining the level of interconnector investment as part of its broader electricity network regulation review. In its draft report, the Productivity Commission concluded that "[i]nvestment in interconnectors to date appears to have provided a reasonably appropriate level of physical capacity to enable trading in power between regions (given current network, generation and demand profiles)."[10] Similarly the AEMC has previously indicated that it "considers on the basis of evidence provided to date that there is no indication of a lack of inter-regional capacity being built."[11]

The LRPP is the power given to the AEMC to issue direction notices to Registered Participants, presumably one or more JPBs, to undertake a RIT-T. The AEMC is to exercise this power in situations where the Commission considers that there has been a potentially inefficiently low level of investigation into resolving an inter-regional constraint. The AEMC is yet to exercise its authority to give a direction under the LRPP.

The NER also requires the AEMC to develop and publish guidelines on the processes used to exercise the LRPP and collecting information from AEMO. The most recent version of the LRPP guideline were published in 2010.[12] Furthermore the AEMC must annually report on its decision on whether to exercise the LRPP.

9 Garnaut, R. *The Garnaut Review 2011: Australia in the Global Response to Climate Change*, 2011, p154.

10 Productivity Commission, *Electricity Network Regulatory Frameworks Draft Report*, 2012, pp 597- 598.

11 Australian Energy Market Commission, *Transmission Frameworks Review, Second Interim Report*, 2012, Sydney, p59.

12 Australian Energy Market Commission, *Last Resort Planning Power Guidelines*, 2010, Sydney.

2 Assessing the use of the Last Resort Planning Power

The AEMC considers that the key issue in deciding whether to exercise the LRPP is whether the JPBs are undertaking appropriate level of planning activities to examine potential limitations on energy flow between regions.

To determine if there is a case for exercising the LRPP, the AEMC made its decision with regard to:

- the National Electricity Objective (NEO);
- the NER clause 5.6.4 and the *LRPP Guidelines 2010*;
- the 2011 process;
- the NTNDPs for 2011 and 2010;
- the 2012 APRs by the JPBs;
- any other relevant transmission planning documents; and
- the advice of the consultants.

2.1 The NER requirements

The NER in clause 5.6.4(h) state that in the course of deciding whether to exercise the LRPP the AEMC must:

> "(1) identify a problem relating to constraints in respect of national transmission flow paths between regional reference nodes or a potential transmission project (the problem or the project);
>
> (2) make reasonable inquiries to satisfy itself that there are no current processes underway for the application of the regulatory investment test for transmission in relation to the problem or the project;
>
> (3) consider whether there are other options, strategies or solutions to address the problem or the project, and must be satisfied that all such other options are unlikely to address the problem or the project in a timely manner;
>
> (4) be satisfied that the problem or the project may have a significant impact on the efficient operation of the market; and
>
> (5) be satisfied that but for the AEMC exercising the last resort planning power, the problem or the project is unlikely to be addressed."

With these requirements in mind, a three stage assessment has been used as discussed in section 2.2.

2.2 Three stage process

In 2011 the AEMC utilised a three stage decision making process in determining whether to exercise the LRPP. The Commission decided to use a similar process to assess the state of interregional constraints this year. The three stages are as follows:

1. Overview of the NEM

2. Examination of identified constraints

3. Preparation of direction

In stage one, a general overview of the NEM is conducted. The goal of this stage is to determine if any identified inter-regional flow constraints have not been sufficiently examined by the JPBs. This overview is done by examining the recent planning reports, specifically the AEMO 2010 and 2011 NTNDP[13]and the constraint report from 2012. This examination is informed by the technical report provided by a consultant. Conclusions and recommendations of these documents from AEMO were compared to the 2012 APRs.

The second stage of the process would only be undertaken if the first stage identifies a constraint on an inter-regional flow path that may not have been adequately examined by the relevant JPBs. This second stage would focus on the particular flow path identified. The goal would be to collect all the information for a more in depth assessment of the identified potential planning gap. During the second stage of the LRPP assessment the AEMC would request information from AEMO and the relevant JPBs using the process laid out by the *LRPP Guidelines 2010*. The AEMC would use this information to more closely examine this inter-regional flow path and the estimated economic impacts of the constraint. If the Commission was to conclude that making a direction may meet the NEO, it would initiate the third stage.

At the third stage of the process the AEMC would request submissions from stakeholders. These submissions would be used to determine what information would need to be included in any direction that would be made to either the relevant JPBs or another registered participant. The third stage assessment of the LRPP would also focus on who should be directed to undertake the RIT-T and potential solutions that could be examined.

2.3 Consultant report

This first stage review was prepared with reference to technical advice provided by Marsden Jacob Associates (MJA). In providing this advice MJA was supported by SW Advisory. The advice report can be found on the AEMC website.[14]

In preparing this report, the consultants were tasked with examining the transmission projects identified by the 2010 and 2011 NTNDPs to the actions elaborated in the 2012 APRs. The consultants were tasked with determining whether there are any planning 'gaps'. A 'gap' would be where one or more JPBs do not appear to have done the appropriate level of transmission planning to investigate whether it is economic to relieve a constraint on an inter-regional flow. The consultants concluded "that there are no interregional planning gaps [and] ... that there is no indication of any planning shortfall."[15]

13 AEMO publishes the NTNDP at the end of each year. The 2012 NTNDP is due to be published by 31 December 2012.

14 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012.

15 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, p31.

3 Summary of inter-regional transmission planning

Any assessment of inter-regional flow paths must involve more than just an assessment of interconnector constraints. We note that in a meshed network constraints deep within a region may influence constraints for the import or export of electricity between regions. The main interregional flow paths considered by the AEMC were:

- South Australia - Victoria;
- New South Wales - Queensland;
- Victoria - New South Wales;
- Victoria - Tasmania; and
- the potential connection between South Australia and New South Wales.

3.1 South Australia - Victoria

Victoria and South Australia are connected by two interconnectors, Murraylink and Heywood. Historically the flow between these states has mainly been export from Victoria to South Australia. However, the last five years have seen an expansion of semi scheduled generation capacity in South Australia. As a consequence the flow between these regions has become increasingly bidirectional. The 2010 NTNDP indicated that examination of potential projects to resolve constraints on this interconnector should be allocated "early attention."[16]

ElectaNet and AEMO are in the process of undertaking a joint RIT-T to examine a potential upgrade for the Heywood interconnector. The main constraint in this region is associated with the uneven Heywood 500/275 kV transformer loadings and voltage instability (collapse) in the vicinity of Heywood and the Portland Alcoa plant.[17]

A Project Assessment Draft Report was recently released as part of the RIT-T process. This indicated that the preferred option that has the most net benefit under the RIT-T criteria is "installation of a 3rd transformer at Heywood and 500 kV bus tie, plus 275 kV series compensation in South Australia and reconfiguration of the 132 kV network between Snuggery-Keith and Keith-Tailem Bend (South Australia)."[18]

Furthermore Murraylink is also being examined by the relevant JPBs. AEMO are considering the capacity of Murraylink as part of an ongoing RIT-T on options to resolve the constraints to the Morrabool - Ballarat No.1 220 kV line.[19]

As the above work indicates that interregional constraints in the Victoria - South Australia flow path are being examined there are no planning gaps that warrant further investigation.

16 AEMO, *National Transmission Network Development Plan*, 2010, p105.

17 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, pp 27-28.

18 AEMO and ElectraNet, *South Australia – Victoria (Heywood) Interconnector Upgrade RIT-T: Project Assessment Draft Report*, 2012, p67.

19 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, p 29.

3.2 New South Wales - Queensland

New South Wales and Queensland are connected by two interconnectors, the Queensland/New South Wales Interconnector (QNI) and Terranora.

In 2008 Powerlink and TransGrid undertook an assessment to investigate the appropriateness of an upgrade of QNI. This process concluded that there was an economic benefit to network augmentation. However the maximum benefit was realised if the work was commenced from 2015/16.[20]

The NTNDP in 2010 and 2011 indicated that this interconnector merited early attention.[21] Powerlink and TransGrid have begun the process of a joint RIT-T to investigate this interregional flow path in both directions. The options investigated as part of this process are shown below.[22]

Option	Description	Increase in Limit	Cost ($M)	2010 NTNDP
1a	Series compensation	To NSW: 470-640 MW To Qld: 210 – 250 MW	150	Covered
1b	Series Compensation with Second Armidale SVC	To NSW: 590-800 MW To Qld: 230-380 MW	200	Not covered
2	Second Armidale SVC	To NSW: 70-80 MW To Qld: 100-130 MW	70	Not covered
3	System Protection Scheme – Fast Fault Clearing Times	To NSW: - To Qld: 40-90 MW	3	Not mentioned
4a	Second High Voltage AC (HVAC) Interconnector at 330kV	To NSW: 1,300 MW To Qld: 1,070 MW	1,300	Directly addressed
4a	New Armidale – Bulli Creek HVAC Interconnector at 330 kV	To NSW: 1,040 MW To Qld: 500 MW	500	Not covered
4c	500 kV High Voltage AC	To NSW: 2,200 MW To Qld: 1,600 MW	2,300	Part of NEMLink
5	High Voltage DC	To NSW: 1,400 MW To Qld: 1,400 MW	500	Mentioned
6	Braking Resistor	To NSW: 100 MW To Qld: 10 MW	10	Not mentioned

The RIT-T is currently ongoing. Powerlink and TransGrid plan to publish an Assessment Draft Report by mid to late 2013.

We consider that this ongoing RIT-T to be an adequate examination of the constraints in the NSW-Qld transmission flow paths. As such there are no planning gaps that require further investigation.

3.3 Victoria - New South Wales

AEMO and TransGrid are currently investigating constraints in the flows in each direction between New South Wales and Victoria.

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20 Powerlink and TransGrid, *Potential Upgrade of Queensland/New South Wales Interconnector (QNI) – Assessment of Optimal Timing and Net Market Benefits*, 2008, p27.

21 AEMO, *National Transmission Network Development Plan*, 2010, p82.

22 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, p24.

AEMO examined acquiring network loading control ancillary service on the Murray - Dederang 330 kV line to increase the capacity between NSW and Victoria.[23] However, due to the recent drop in demand, AEMO has determined this service is not currently needed. AEMO will monitor the situation and indicate in future APRs whether to revise this decision.[24]

Furthermore, direct work on the interconnection between NSW and Victoria was considered important enough to warrant "early attention" in the 2010 NTNDP. MJA and SW Advisory note that TransGrid and AEMO are in the preliminary stages of examining potential options for an upgrade.[25]

In light of the ongoing work to examine constraints both within Victoria and NSW the Commission considers that these are being adequately addressed. Therefore no potential planning gaps have been identified.

3.4 Victoria- Tasmania

Basslink connects Tasmania to the mainland and is the only Market Network Service Provider in the NEM. As it is a market and not a regulated interconnector, it is not included in either AEMO's or Transend's APRs. The construction of a second interconnector is discussed in the 2010 and 2011 NTNDPs, however these conclude construction of such a link is not warranted under most scenarios. This indicates that there is no planning gap.

3.5 New South Wales - South Australia

Currently there are no direct connections between South Australia and New South Wales. The possibility of constructing such a connection is currently being examined by both AEMO and TransGrid.[26] As such there is no planning gap that needs further investigation.

23 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, p 27.

24 AEMO, *New forecasts defer the need to increase transfer capacity*, 2012.

25 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, p25.

26 MJA and SW Advisory, *Last resort planning power 2012 comparison report*, 2012, pp 25-26.

4 AEMC's decision

In 2011 the AEMC devised a three stage process for assessing whether and how the AEMC should exercise an LRPP direction. The Commission used the same decision making process this year. As elaborated previously, stage 1 of this approach is to take an overview of the NEM and determine if there are any potential planning gaps that require deeper examination. To determine this, a comparison was done between the documents prepared by AEMO and the JPBs. This was to determine if there were any gaps in interregional planning highlighted by AEMO and not resolved by the JPBs.

Analysis undertaken by MJA and SW Advisory has informed the Commission's decision.

The AEMC has undertaken the stage 1 assessment for deciding whether to exercise the LRPP. From the above analysis, the Commission has concluded that the JPBs are providing sufficient attention to all the constraints of inter-regional transmission flow paths in the NEM. The Commission has decided that there are no planning gaps in respect to national transmission flow paths between regional reference nodes. Therefore we will not be proceeding to a stage 2 assessment for any flow paths in 2012. As a consequence, the AEMC will not be issuing a direction to a Registered Participant under the LRPP in 2012.

Abbreviations

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
APR	Annual Planning Report
JPB	Jurisdictional Planning Body
LRPP	Last Resort Planning Power
MCE	Ministerial Council on Energy
MJA	Marsden Jacob Associates
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NTNDP	National Transmission Network Development Plan
NTP	National Transmission Planner
QNI	Queensland/New South Wales Interconnector
RIT-T	Regulatory Investment Test for Transmission