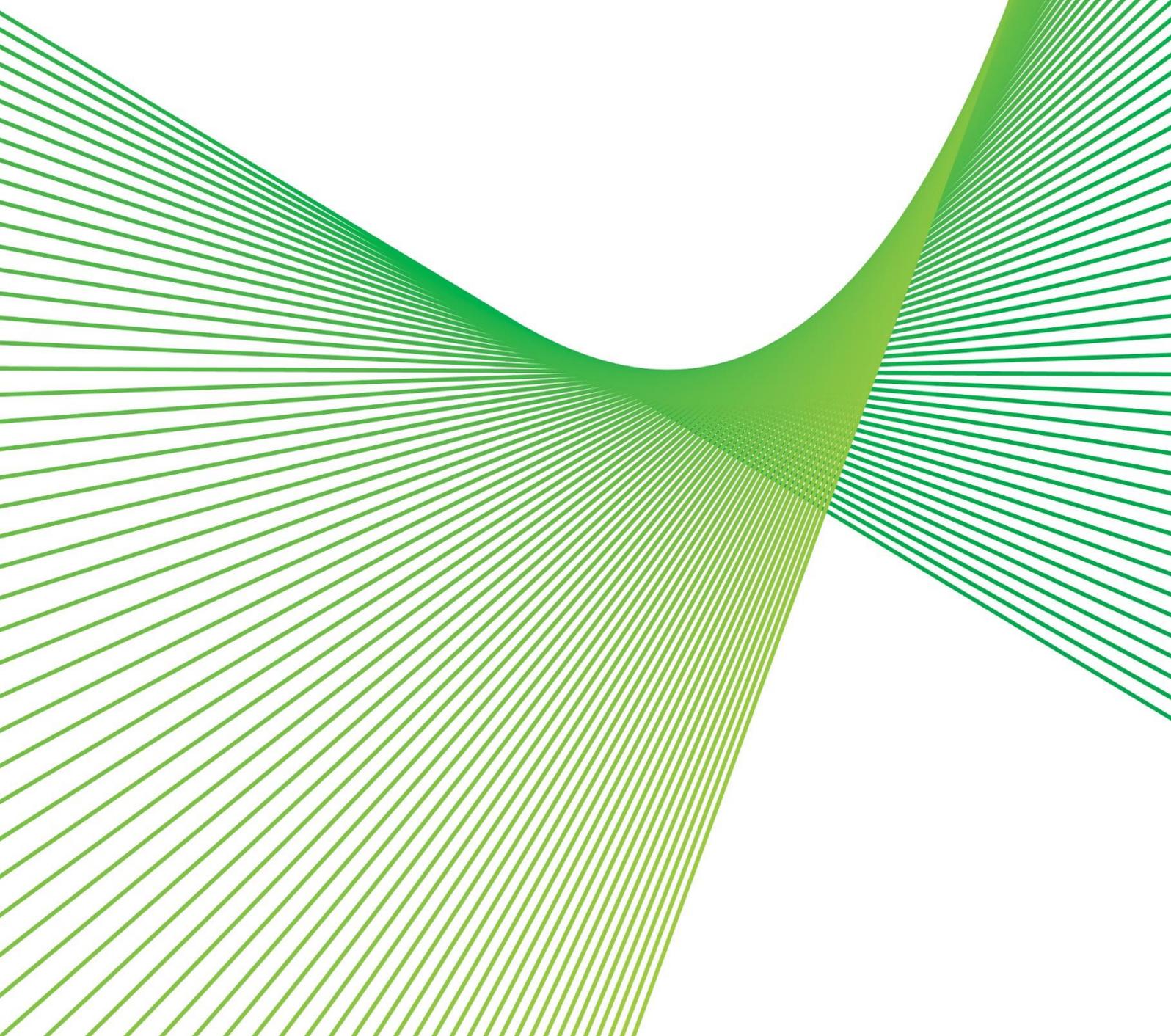


Maintaining Reliable Supply in the Deniliquin, Coleambally and Finley area

RIT-T Project Assessment Conclusions Report

Region: South West NSW

Date of issue: 24 February 2023



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Summary

We are applying the Regulatory Investment Test for Transmission (RIT-T) to options for maintaining reliable supply in the Deniliquin, Coleambally and Finley area in south west New South Wales (NSW). Publication of this Project Assessment Conclusions Report (PACR) represents the final step in the RIT-T process.

The Australian Energy Market Operator (AEMO) forecasts that minimum demand in NSW will rapidly decline over the next 10 years due to ongoing growth in distributed solar (PV) generation.¹ In south west NSW, small to large scale embedded generation connecting to the Essential Energy network is forecast to continue growing, driving declining minimum demand in this region.

The south west NSW region is supplied by four 132 kV transmission lines which form a link between Wagga Wagga and Darlington Point, via Deniliquin, Coleambally, and Finley. Our power system studies show that the declining minimum demand in these areas mean that the electricity transmission system in these areas is at risk of exceeding allowable voltage levels during times of low demand and in particular when nearby solar farms are unable to provide reactive power support.

In addition to the excessive voltage issues we have identified, AEMO have declared an immediate Reliability and Security Ancillary Services (RSAS) gap of 2 MVAR absorbing reactive power in the Coleambally region for overnight when nearby solar farms are not available.^{2,3}

We are required to manage the risk of system voltages exceeding their allowable limits as set out in the National Electricity Rules (NER)⁴ and procure services to meet the RSAS gap declared by AEMO.⁵ This RIT-T therefore examines various network and non-network options to address the excess voltage levels to ensure compliance with the requirements of the NER and provide the greatest net benefit to the market.

Identified need: maintaining reliable supply to the Deniliquin, Coleambally and Finley area in compliance with NER requirements

The identified need for this RIT-T is to maintain reliable supply in the Deniliquin, Coleambally and Finley areas by managing the risk of excess voltage levels due to declining minimum demand. There is an increasing likelihood of unserved energy and non-compliance with the NER without investment to address the need.

We are required to maintain compliance with Schedule 5.1.4 of the NER and meet the RSAS gap declared by AEMO as a result of the declining minimum demand.⁶ Consequently, we consider this a 'reliability corrective action' under the RIT-T. A reliability corrective action differs from a 'market benefits'-driven RIT-T in that the preferred option is permitted to have negative net economic benefits on account of it being required to meet an externally imposed obligation on the network business.

¹ AEMO, [2021 Electricity Statement of Opportunities](#), August 2021.

² AEMO, [2021 System Security Reports](#), December 2021.

³ AEMO, [2022 Network Support and Control Ancillary Services \(NSCAS\) Report](#), December 2022

⁴ [Schedule 5.1.4 of the NER](#) requires us to plan and design equipment for voltage control to maintain voltage levels within 10 per cent of normal voltage. We expect a non-compliance with this requirement will occur without remedial action.

⁵ AEMO, [2022 Network Support and Control Ancillary Services \(NSCAS\) Report](#), December 2022

⁶ [Schedule 5.1.4 of the NER](#)

No submissions received in response to the Project Specification Consultation Report

We published a Project Specification Consultation Report (PSCR) on 2 June 2022 and invited written submissions on the material presented within the document.

In the PSCR, we noted that non-network options may be able to assist with meeting the identified need, specifically non-network technologies who are able to provide reactive support. At the PSCR stage, we considered that possible solutions included but were not limited to:

- battery energy storage systems (BESS), and
- generators in the region who are able to provide reactive power support.

The PSCR provided details on the technical characteristics that any non-network solutions would need to provide in order to help meet the identified need. Proponents of non-network options were encouraged to make submissions on any non-network option that they believe can address, or contribute to, the identified need.

No submissions were received in response to the PSCR.

No material developments since publication of the PSCR

The following changes have occurred since publication of the PSCR:

- updated capital costs for both options to reflect the latest market rates
- updated market benefits for both options using the latest demand forecasts
- updated commission dates for both options based on the latest delivery program
- updated scenarios and parameters to align with AEMO's 2022 Integrated System Plan (ISP)

These changes have not made an impact on the preferred option. There were no other material changes since publication of the PSCR which affected the ranking of the credible options.

Installation of two 11 MVar 66 kV reactors at Deniliquin remains the optimal way to maintain reliable supply

We identified two credible network options that meet the identified need from a technical, commercial, and project delivery perspective.⁷ These options are summarised in Table E-1: below.

Table E-1: Summary of the credible options

Option	Description	Capital costs (\$M 2021-22)	Operating costs (\$/year 2021-22)
Option 1	Install two 10 MVar 132 kV reactors at Deniliquin	9.7	40,000
Option 2	Install two 11 MVar 66 kV reactors at Deniliquin	8.5	40,000

⁷ As per clause 5.15.2(a) of the NER.

For the purposes of this RIT-T, we only modelled outcomes under the Step Change ISP scenario. This scenario was selected because it is the most likely scenario under AEMO’s latest ISP.⁸ Adoption of this scenario is also consistent with the minimum demand forecasts provided by Essential Energy, which are POE50 forecasts and therefore represent the most likely forecast. We do not consider it necessary to model outcomes under the other ISP scenarios since the assumptions and parameters underpinning those scenarios will not affect the ranking of the credible options given that each option provides the same level of market benefits.

Based on our analysis, Option 2 delivers the highest net economic benefit while meeting the identified need. This makes Option 2 the preferred option. Since this RIT-T is a reliability corrective action, the top-ranked option is permitted to have a negative market benefit.

Table E-2: Estimated net economic benefit for each option, present value (\$M, real 2021-22)

Option	Step Change	Ranking
Option 1	-0.83	2
Option 2	-0.10	1

Sensitivity testing finds that Option 2 continues to deliver higher net economic benefits compared to Option 1, over a range of alternate assumptions regarding key parameters.

Implementing Option 2 by 2025/26 will meet the relevant regulatory obligations set out in the NER and address the RSAS gap declared by AEMO,⁹ maintaining reliable supply to the Deniliquin, Coleambally and Finley area in the long term at the lowest cost.

Conclusion: Installation of two 11 MVar 66 kV reactors at Deniliquin is optimal

This PACR finds that Option 2 (install two 11 MVar 66 kV reactors at Deniliquin) remains the preferred option at this final stage. This option was found to have the greatest net economic benefit under the Step Change scenario investigated in this PACR, and under a range of sensitivities on key input parameters. Moving forward with this option is the most prudent and economically efficient solution to managing the risk of system voltages exceeding their allowable limits as set out in the NER and to address the RSAS gap identified by AEMO in the long term.¹⁰

The estimated capital cost of Option 2 is approximately \$8.5 million. Routine operating and maintenance cost are estimated at approximately \$40,000/annum. The works will be undertaken between 2022/23 and 2025/26. We estimate that Option 2 will be commissioned in 2025/26. All works will be completed in accordance with the relevant standards by 2025/26 with minimal modification to the wider transmission assets. Necessary outages of in-service equipment will be planned appropriately in order to complete the works with minimal impact on the network.

⁸ In the 2022 ISP, the Step Change scenario is assigned a probability of 50% (See: AEMO, 2022 Integrated System Plan, June 2022, p. 34, <https://aemo.com.au/-/media/files/major-publications/isp/2022/2022-documents/2022-integrated-system-plan-isp.pdf?la=en>)

⁹ AEMO, [2022 Network Support and Control Ancillary Services \(NSCAS\) Report](#), December 2022

¹⁰ AEMO, [2022 Network Support and Control Ancillary Services \(NSCAS\) Report](#), December 2022

Next steps

This PACR represents the final step of the consultation process in relation to the application of the Regulatory Investment Test for Transmission (RIT-T) process. It follows a Project Specification Consultation Report (PSCR) released in June 2022. No submissions were received in response to the PSCR.

The second step, production of a Project Assessment Draft Report (PADR) was not required for this RIT-T as we consider its investment in relation to the preferred option to be exempt from that part of the process under NER clause 5.16.4(z1). Production of a PADR was not required due to:

- the estimated capital cost of the proposed preferred option being less than \$46 million¹¹;
- the PSCR stating:
 - the proposed preferred option (including reasons for the proposed preferred option)
 - that the RIT-T is exempt from producing a PADR
 - that the proposed preferred option and any other credible option will not have material market benefits¹² except for voluntary load curtailment and involuntary load shedding
- the RIT-T proponent considers that there were no PSCR submissions identifying additional credible options that could deliver a material market benefit; and
- the PACR must address any issues raised in relation to the proposed preferred option during the PSCR consultation.

Further details on the RIT-T can be obtained from our Regulation team via regulatory.consultation@transgrid.com.au.¹³ In the subject field, please reference 'Maintaining Reliability in the Deniliquin, Coleambally and Finley area'.

Any party wishing to dispute the conclusions made in this amended PACR must give notice of the dispute in writing, setting out the grounds for the dispute, to the AER and, at the same time, give a copy of the dispute notice to Transgrid. The closing date for this to occur for this PACR is 27 March 2023.¹⁴

¹¹ Varied from \$43m to \$46m based on the [AER Final Determination: Cost threshold review](#) November 2021.

¹² As per clause 5.16.1(c)(6)

¹³ Transgrid is bound by the Privacy Act 1988 (Cth). In making submissions in response to this consultation process, Transgrid will collect and hold your personal information such as your name, email address, employer and phone number for the purpose of receiving and following up on your submissions. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. See Privacy Notice within the Disclaimer for more details.

¹⁴ NER clause 5.16B(c).