

Decision: North West Slopes and Bathurst, Orange and Parkes

Determination on dispute - Application of the regulatory investment test for transmission

November 2022

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Executive Summary	4
1 Introduction	7
1.1 Who we are and our role in this process	7
1.2 North West Slopes Area RIT-T.....	7
1.3 Bathurst, Orange and Parkes RIT-T.....	9
1.4 The dispute	10
1.5 Structure of this document	11
2 RIT-T dispute resolution	11
2.1 Our dispute resolution process.....	11
2.2 Application of our dispute resolution process	14
2.3 Our assessment approach	14
3 AER assessment of RIT-T dispute	16
3.1 Selection of reasonable scenarios and weightings	16
AER assessment.....	18
3.2 Demand forecasts.....	20
AER assessment.....	21
3.3 Network capital costs	25
AER assessment.....	25
3.4 Value of customer reliability (VCR)	27
3.5 Discount rates.....	29
AER Assessment	29
3.6 Consultation Process	30
4 AER determination	31

Executive Summary

This document sets out the Australian Energy Regulator's (AER) determination in regard to a dispute, brought by the Public Interest Advocacy Centre (PIAC), of Transgrid's regulatory investment tests for transmission (RIT-Ts) for its North West Slopes (NWS), and Bathurst, Orange and Parkes (BOP) projects.

The AER is the economic regulator for electricity transmission and distribution services in the National Electricity Market (NEM). Our electricity-related powers and functions are set out in the National Electricity Law (NEL) and National Electricity Rules (NER).

We are responsible for developing, publishing and maintaining the RIT-T and accompanying RIT-T Application Guidelines (RIT-T Guidelines). The RIT-T is an economic cost-benefit analysis that is used by transmission businesses to assess and rank different electricity investment options. We are also responsible for determining RIT-T disputes raised by parties following the conclusion of the RIT-T process as set out in the NER. This requires the AER to consider whether the RIT-T proponent (in this case Transgrid) correctly applied the RIT-T in accordance with the NER.

Bathurst Orange Parkes RIT-T

In March 2021, Transgrid initiated the RIT-T consultation process for BOP in order to reinforce the transmission network in Central West NSW. This was due to expected demand growth associated with a number of project expansions or new connections in the Central West NSW area.

Transgrid published the Project Assessment Conclusions Report (PACR) for the BOP RIT-T on 30 June 2022. The preferred option identified in the PACR involves a non-network solution provided through new Battery Energy Storage Systems (BESS) at Parkes and Panorama along with the installation of static synchronous compensators (STATCOMs) at Parkes and Panorama or a synchronous condenser (as a network investment) at Parkes in the near-term. It also involves a new 132 kV line between Wellington and Parkes in the future, with the date of this line depending on outturn demand forecasts. Transgrid has stated that it will perform a RIT-T at a later stage for the line. The cost is estimated to be \$121 million for the line and confidential for the BESS and STATCOMs.¹

North West Slopes Area RIT-T

In April 2021, Transgrid initiated the RIT-T consultation process for NWS to maintain reliable supply to the North-West Slopes area of northern NSW in anticipation of increased electricity demand in the area.

The PACR for NWS RIT-T was published on 30 June 2022. The preferred option identified in the PACR involves a non-network solution provided through a BESS at the Gunnedah 132 kV substation and the installation of a third 60 MVA 132/66 kV transformer at Narrabri 132/66 kV substation in the near-term. It also involves the rebuilding of the existing 969 line

¹ Transgrid, *BOP PACR*, 30 June 2022, page 9

between the Tamworth 330 kV and Gunnedah substations as a double circuit line and upgrading the 9UH line between Narrabri and Boggabri North to a rating of 100 MVA over the longer-term, depending on outturn demand forecasts. The cost is estimated to be \$123 million for the line work and transformer, and confidential for the BESS.²

Dispute notices

On 1 August 2022, the AER received dispute notices from PIAC, contending that Transgrid may have incorrectly applied the RIT-T in both the NWS and the BOP PACRs. PIAC stated that³:

- The scenarios used to assess the costs and market benefits for each credible option are not reasonable, or have not been reasonably weighted, because the assumptions and inputs relating to network capital costs, demand forecasts, Value of Customer Reliability (VCR) and discount rates, are incorrect, implausible or outside of what can be assumed with reasonable confidence. The use of these inputs and assumptions, and the unreasonable weighting of the scenarios, may have materially influenced timing of investment, ranking of the credible options and basis for any investment, compared to 'do nothing'.

PIAC has also requested the AER to:

- Review the values and weightings noted herein in the relevant assumptions for the 'central', 'low' and 'high' net economic benefits scenarios used by Transgrid in the PACRs; and
- Where relevant, direct Transgrid to amend the PACRs to correctly apply the RIT-T with respect to the scenarios, underlying values and assumptions and to reassess the ranking and timing of options accordingly.

Prior to publication of the PACRs, PIAC also made separate submissions in both RIT-T processes raising similar concerns which they consider were inadequately addressed by Transgrid in its BOP and NWS Project Assessment Draft Reports (PADRs).⁴

AER determination

After considering these grounds of the dispute and under rule 5.16B(d)(3)(ii) of the NER, we determine that, based on the grounds of the dispute, Transgrid is required to amend its PACRs for both the NWS and BOP RIT-Ts by **1 February 2023**.

In conducting our review, we are not satisfied that Transgrid correctly applied the RIT-T insofar as it:

- did not use the scenarios from the most recent Inputs, Scenarios and Assumptions Report (IASR), and in departing from those scenarios, it did not provide demonstrable reasons for that approach; and

² Transgrid, *NWS PACR*, 30 June 2022, page 10

³ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 1 and 2

⁴ PIAC, *Submission to Transgrid's PADRs for North West Slopes area and Bathurst, Orange and Parkes area*, 7 April 2022

- did not demonstrate that the alternative scenarios selected were reasonable and deliver on a reasonable range of plausible states of the world; and
- did not use a common discount across all scenarios based on the discount rate in AEMO's most recent IASR, and in departing from that report, it did not provide demonstrable reasons for that approach.

To address the above matters, the AER requires Transgrid to amend the BOP and NWS PACRs to:

- include scenarios from the most recent IASR, and only use different scenarios where Transgrid can provide demonstrable reasons for that approach;
- demonstrate if alternate scenarios are reasonable such that a reasonable range of plausible states of the world is generated. In particular, Transgrid should demonstrate that these scenarios comprise of internally consistent values for parameters such that they could reasonably occur in the same state of the world and have weightings that reasonably estimate the probability of the relevant scenario occurring;
- include a common discount across all scenarios in updated cost benefit analysis based on the discount rate in AEMO's most recent IASR, or otherwise provide demonstrable reasons for why a variation from this value is necessary; and
- include an updated cost benefit analysis, including updated sensitivity analysis, for each credible option for each reasonable scenario and its impact on the ranking of the credible options assessed in the PACR, as required in accordance with the directions above.

Our view is that more transparency would have assisted stakeholders in understanding Transgrid's approach and application of the RIT-T for these projects. We consider that full provision of information is essential for ensuring the transparency and stakeholder confidence in the RIT-T process. While Transgrid did not include certain information in the PACR for confidentiality reasons, more information that was not subject to confidentiality constraints could have been included that would have clarified points of dispute. In this instance, it may have helped prevent this dispute and ensured efficient and timely resolution of the RIT-T process.

Accordingly, we recommend that the amended BOP and NWS PACRs include sensitivity analysis associated with varying the estimated capital costs of the credible options and the discount rate.

We would also recommend that the amended BOP and NWS PACRs include information to enable interested parties to understand the:

- calculation of the VCR values
- methodology used to estimate capital costs; and
- basis for including forecast spot loads across the scenarios.

1 Introduction

This section sets out the relevant background information to our determination on the dispute in relation to the BOP and NWS RIT-Ts, including a summary of the dispute and the dispute resolution process.

1.1 Who we are and our role in this process

The AER is the economic regulator for electricity transmission and distribution services in the NEM.⁵ Our electricity-related powers and functions are set out in the NEL and NER.

We are responsible for developing, publishing and maintaining the RIT-T and accompanying RIT-T Guidelines.⁶ The RIT-T is an economic cost–benefit analysis that is used by transmission businesses to assess and rank different electricity investment options.⁷ The purpose of the RIT-T is to identify the credible option⁸ which maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the market (the preferred option).⁹ The RIT-T Guidelines provide guidance on the operation and application of the RIT-T.¹⁰

Transmission businesses must apply the RIT-T to proposed transmission investments that are not actionable ISP projects, except in the circumstances specified in clause 5.16.3(a) of the NER.¹¹ The RIT-T aims to promote efficient transmission investment decision making in the NEM and provide greater consistency and transparency in investment decision making.

1.2 North West Slopes Area RIT-T

Transgrid published the PACR for NWS on 30 June 2022.¹² The preferred options identified in the PACR involve two stages:

- Stage 1 involves a non-network solution provided through a Battery Energy Storage System (BESS) at Gunnedah and a third transformer at Narrabri with expected timing in 2025-26.
- Stage 2 involves the rebuilding of the existing 969 line between the Tamworth and Gunnedah as a double circuit line and upgrading the 9UH line between Narrabri and

⁵ In addition to regulating transmission and distribution in the NEM and Northern Territory, we also monitor the wholesale electricity and gas markets to ensure suppliers comply with the legislation and rules, taking enforcement action where necessary, and regulate retail energy markets in Queensland, New South Wales, South Australia, Tasmania (electricity only) and the ACT.

⁶ AER, *RIT-T application guidelines*, August 2020

⁷ The RIT-T at the time of these PACRs, version 2.0, was published by the AER on 25 August 2020.

⁸ A credible option is defined in NER, cl. 5.15.2(a) as an investment option that (a) addresses the identified need; (b) is commercially and technically feasible; and (c) can be implemented in sufficient time to address the identified need. A credible option is also an option that is identified as a credible option in accordance with paragraphs (b) or (d) of cl. 5.15.2 (as relevant).

⁹ NER, cl. 5.15A.1(c)

¹⁰ AER, *RIT-T application guidelines*, August 2020

¹¹ NER, cl. 5.16.3(a)

¹² NWS is a non-actionable ISP project as per AEMO's June 2022 ISP.

Boggabri North over the longer-term, depending on outturn demand forecasts. This stage has an expected timing of 2029-30.

The cost of the preferred option is estimated to be \$123 million for the line works and transformer, while the costs for the BESS component was not published on the basis that this is commercial in confidence.

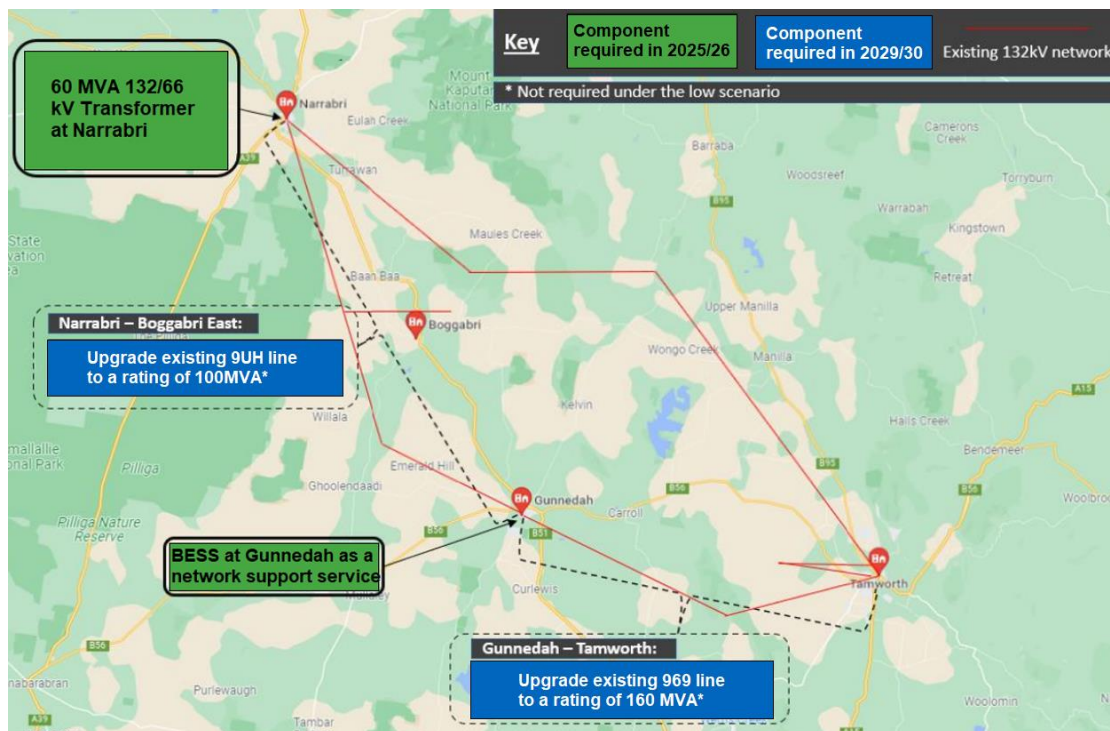
The PACR estimates that the preferred options, known as 5B and 5C, deliver net market benefits of \$513 million and \$496 million, respectively.

Transgrid has proposed that, if the non-network proponents are unable to provide the non-network options, they will seek an exemption from having to re-apply the RIT-T and consider the top-ranking solely network option as the preferred option.¹³

The identified need in NWS RIT-T was primarily driven by electricity demand in the North-West Slopes area which Transgrid forecasts to increase significantly going forward due to a number of substantial industrial loads that are anticipated to connect in the area.¹⁴ The majority of the benefits included in the PACR involve the avoided costs of involuntary load curtailment as a result on expected demand exceeding the limits of the network.

Figure 1 shows the different components and timings of the preferred options identified in the NWS PACR.

Figure 1: NWS PACR preferred option



Source: Transgrid, PACR, 30 June 2022¹⁵

¹³ NER, cl. 5.16.4 (z3)

¹⁴ The PACR states that the RIT-T is to address a reliability corrective action. The NER requires that the preferred option maximises the net economic benefit for a reliability corrective action network need.

¹⁵ AER amended the map provided in the PACR to display the components of the preferred option.

1.3 Bathurst, Orange and Parkes RIT-T

The PACR for the BOP RIT-T was published on 30 June 2022.¹⁶ The preferred option identified in the PACR involves two stages:

- Stage 1 involves a non-network solution provided through new Battery Energy Storage Systems (BESS)¹⁷ (confidential costs) at Parkes and Panorama along with either,
 - the installation of static synchronous compensators (STATCOMs) at Parkes and Panorama (known as option 7D in PACR)¹⁸; or
 - a synchronous condenser (as a network investment) at Parkes in the near-term (known as option 7E in PACR) at the cost of \$41m.
- Stage 2 involves a new 132 kV line between Wellington and Parkes in the future, with the need for this line depending on outturn demand forecasts estimated to cost \$121m.

The PACR estimates that the preferred options, known as 7D and 7E, deliver net market benefits of \$3,221m and \$3,202m, respectively. Both options include the line, BESS and STATCOMs, however, option 7E also includes the synchronous condensers.

The identified need in the BOP RIT-T is mainly driven by Transgrid's latest demand forecasts which estimate that electricity demand is expected to increase substantially in the Orange and Parkes areas going forward due to expected demand growth associated with a number of project expansions or new connections including:¹⁹

- the expansion of some existing large mine loads in the area
- the planned connection of new mine/industrial loads; and
- general load growth around Parkes, including from the NSW Government's Parkes Special Activation Precinct (SAP).

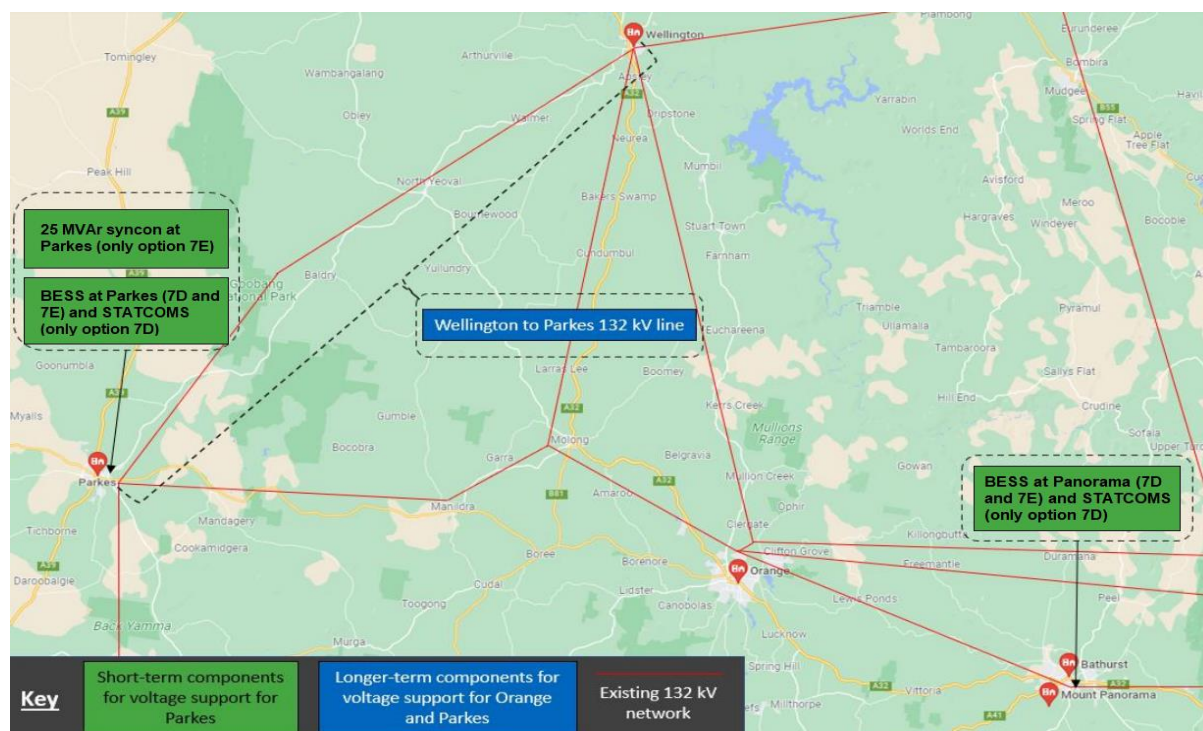
¹⁶ BOP is a non-actionable ISP project as per AEMO's June 2022 ISP.

¹⁷ Costs for the BESS component were reported confidential in the PACR.

¹⁸ Costs were reported confidential in the BOP PACR for STATCOMs.

¹⁹ Transgrid, *BOP PACR*, 30 June 2022, page 67

Figure 2: BOP preferred option



Source: Transgrid, PACR 30 June 2022²⁰

1.4 The dispute

On 1 August 2022, the AER received a notice of dispute from PIAC disputing the conclusions of the BOP and NWS PACRs.²¹ PIAC has raised the dispute on the grounds that Transgrid may have incorrectly applied the RIT-T in both the NWS PACR and the BOP PACR. PIAC contends that:

- The scenarios used to assess the costs and market benefits for each credible option are not reasonable, or have not been reasonably weighted, because the assumptions and inputs relating to network capital costs, demand forecasts, VCR and discount rates, are incorrect, implausible or outside of what can be assumed with reasonable confidence.
- The use of these incorrect or implausible assumptions, and the unreasonable weighting of the scenarios, may have materially influenced timing of investment, ranking of the credible options and basis for any investment.

In its dispute notice, PIAC's requested the AER to:

- review the values and weightings in the relevant assumptions for the 'central', 'low' and 'high' net economic benefits scenarios used by Transgrid in the PACRs; and
- where relevant, direct Transgrid to amend the PACRs to correctly apply the RIT-T with respect to the scenarios, underlying values and assumptions and to reassess the ranking and timing of options accordingly.

²⁰ AER amended the map provided in the PACR to display the components of the preferred option

²¹ AER, *AER receives notification of RIT-T dispute from PIAC*, 25 August 2022

1.5 Structure of this document

This document sets out our determination on the dispute, including the reasons for the determination.

The decision is structured as follows:

- Section 2 sets out our dispute resolution process and how it relates to the present dispute.
- Section 3 sets out our assessment of the application of the RIT-T by Transgrid.
- Section 4 sets out our determination on PIAC's RIT-T dispute.

2 RIT-T dispute resolution

2.1 Our dispute resolution process

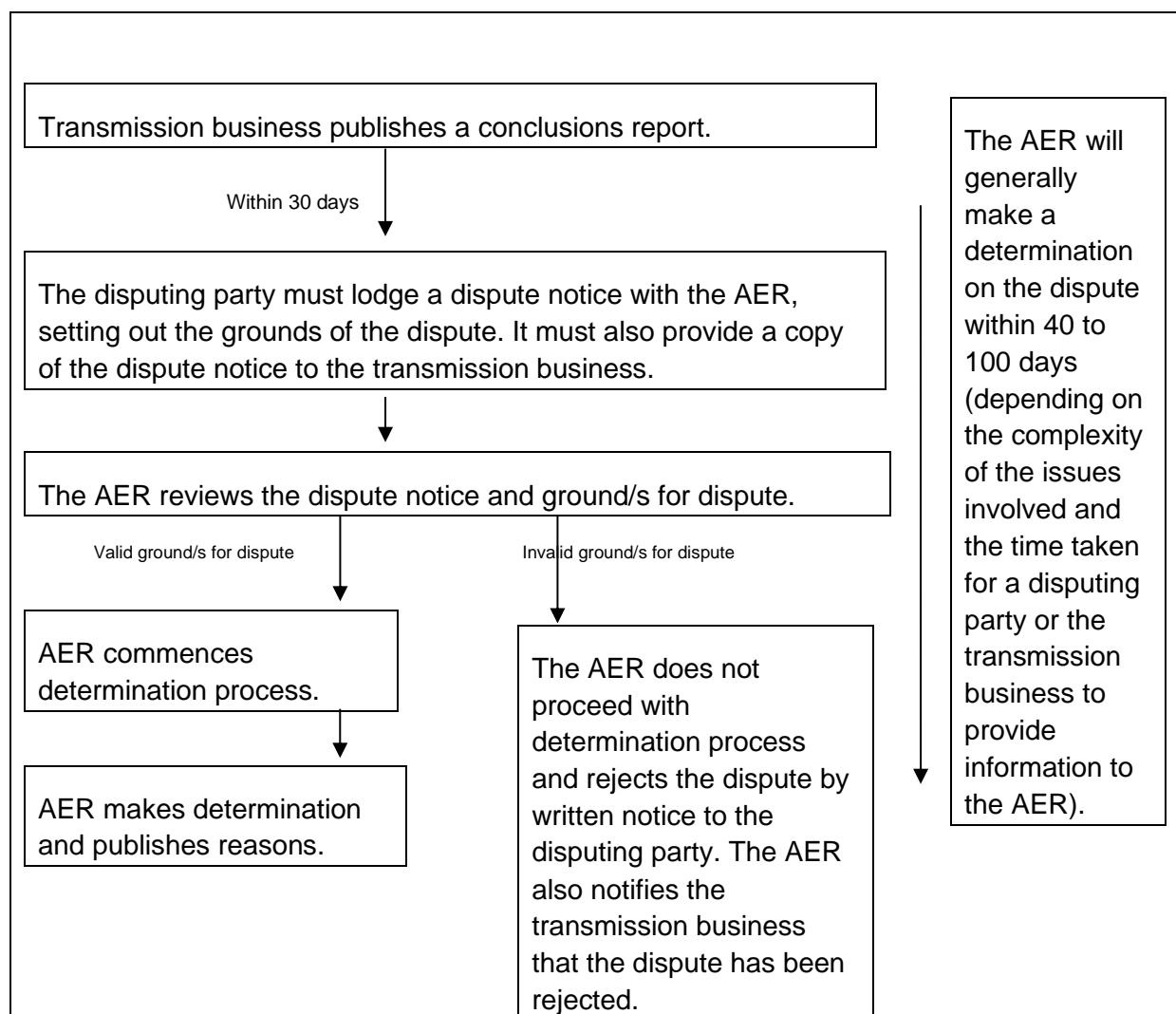
The AER is responsible for determining RIT-T disputes raised by parties following the conclusion of the RIT-T consultation process as set out in the NER. In accordance with rule 5.16B(c) of the NER, certain parties may raise a dispute in relation to the conclusions made in the PACR by a RIT-T proponent by lodging a written notice to the AER within 30 days of the publication of the PACR.

Rule 5.16B(a) of the NER identifies Registered Participants, the AEMC, Connection Applicants, Intending Participants, AEMO and interested parties as parties eligible to lodge a dispute notice. A dispute may be raised about conclusions made by the RIT-T proponent in the project assessment conclusions report in relation to:²²

- the application of the RIT-T
- the basis on which the RIT-T proponent has classified the preferred option as being for reliability corrective action; or
- whether the preferred option will have a material inter-network impact.

²² NER, r. 5.16B (a)

Figure 3: Dispute resolution process



A dispute notice may not be raised about any issues in the PACR which the RIT-T treats as externalities or relate to an individual's personal detriment or property rights.²³ The AER's RIT-T Guidelines provide guidance on the information that should be included in a dispute notice.²⁴ The RIT-T Guidelines also provide a summary of the RIT-T dispute resolution process. This summary has been reproduced as Figure 3 above.²⁵

After considering the dispute notice and any other relevant information, we must either reject the dispute or make and publish a determination. We can:

- reject the dispute by written notice to the disputing party if we consider that the grounds for the dispute are misconceived or lacking in substance; and
- notify the RIT-T proponent that the dispute has been rejected.²⁶

²³ NER, r. 5.16B (b)

²⁴ AER, *RIT-T application guidelines*, August 2020, page 70

²⁵ AER, *RIT-T application guidelines*, August 2020, page 71

²⁶ NER, r. 5.16B (d)(1) and (2)

Alternatively, we must make and publish a determination that:

- directs the RIT-T proponent to amend the matters set out in the PACR, and specifies a reasonable timeframe for the RIT-T proponent to comply with the AER's direction; or
- states that, based on the grounds of the dispute, the RIT-T proponent will not need to amend the PACR.²⁷

We must decide whether a dispute is valid and resolve the dispute within:

- 40 days of receiving the dispute notice; or
- an additional period of up to 60 days where we notify interested parties that additional time is required to make a determination because of the complexity or difficulty of the issues involved.²⁸

In making a determination on the dispute, we:

- must only take into account information and analysis that the RIT-T proponent could reasonably be expected to have considered or undertaken at the time it performed the RIT-T
- must publish our reasons for making the determination
- may disregard any matter raised by the disputing party or the RIT-T proponent that is misconceived or lacking in substance; and
- must specify a reasonable timeframe for the RIT-T proponent to comply with the AER's direction to amend the matters set out in the PACR.²⁹

Under rule 5.16B (f)(3) of the NER, we may request additional information regarding the dispute from the disputing party and/or the RIT-T proponent. The disputing party or the RIT-T proponent (as the case may be) must provide any additional information as soon as is reasonably practicable.³⁰

A request for additional information will automatically extend the period of time for making a determination by the amount of time it takes the relevant party to provide the requested information, provided that:

- we make the request for additional information at least seven days prior to the expiry of the relevant period; and
- the RIT-T proponent or disputing party provides the information within 14 days of receipt of the request.³¹

²⁷ NER, r. 5.16B (d)(3)

²⁸ NER, r. 5.16B (d)

²⁹ NER, r. 5.16B (f)

³⁰ NER, r. 5.16B (h)

³¹ NER, r. 5.16B (i)

2.2 Application of our dispute resolution process

We received a written dispute notice from PIAC on 1 August 2022. Rule 5.16B (c) of the NER requires a dispute notice to be provided to us within 30 days of the date of the publication of the PACR.³²

After an initial assessment, we considered that the dispute notice was not misconceived nor lacking in substance and that it adequately specified the grounds of the dispute.³³ The concerns raised in the dispute notice are summarised in section 1.4.

To assess the concerns raised by PIAC in its dispute notice, we sought further information from Transgrid regarding scenario selection, demand forecasts, and sensitivity testing on 29 August. Transgrid provided this information on 16 September. We sent a follow-up information request on 7 October. Transgrid provided this information on 14 October.

Copies of our information requests and Transgrid's responses are available on our website.³⁴

2.3 Our assessment approach

Our review of the grounds of dispute was an assessment against the RIT-T requirements. That is, we conducted a review to assess whether the grounds of the dispute identified a failure by Transgrid to correctly apply the RIT-T in accordance with the NER.³⁵

Accordingly, our assessment focused on identifying whether Transgrid in its PACRs for the BOP and NWS RIT-Ts complied with the RIT-T requirements regarding the:

- Selection of reasonable scenarios and scenario weightings; and
- Adoption of key inputs and assumptions including capital costs, demand forecasts, value of customer reliability and discount rates used in the scenarios.

Table 1 sets out the specific list of issues raised by PIAC and a reference to the relevant section in this document where we have addressed those issues.

³² Given that the day 30 days after the publication of the PACRs did not fall on a business day, section 28(3) of Schedule 2 of the Electricity Law operates to allow the dispute notice to be received on the next business day. Therefore, the deadline for raising a valid dispute in accordance with clause 5.16B(c) was met by the disputing party.

³³ NER, r. 5.16B (d)

³⁴ AER, *AER receives notification of RIT-T dispute from PIAC*, 25 August 2022

³⁵ NER, r. 5.16B (a)

Table 1: Issues raised in dispute notice and AER assessment

Issues raised in the dispute notice	Reference to AER Assessment
PIAC raises the issue that scenarios are not reasonable and are not reasonably weighted.	3.1 Selection of reasonable scenarios
PIAC raises concern on the lack of transparency and justification provided by Transgrid in relation to the demand forecasts of future electricity loads assumed in the BOP and NWS PACRs.	3.2 Demand forecasts
PIAC states that the capital costs are underestimated.	3.3 Network capital costs
PIAC states that while Transgrid has stated the VCRs used align with the AER's values, these are load-weighted estimates which it is difficult for stakeholders to assess without visibility of the load forecasts that feeds into those estimates.	3.4 Value of customer reliability (VCR)
PIAC is concerned that the discount rate used by Transgrid in both PACRs for the high economic benefits scenarios is implausibly low for the weighting of 18% given to those scenarios, as the AusNet WACC in question represents a historically low WACC that is implausibly low for likely future economic and financial market conditions. PIAC requests the AER assess if Transgrid's proposed combination of discount rate and weighting is appropriate for the high benefits scenarios.	3.5 Discount rates

3 AER assessment of RIT-T dispute

This section outlines our assessment of Transgrid's application of the NWS and BOP RIT-Ts in response to the dispute notice we received from PIAC.

3.1 Selection of reasonable scenarios and weightings

PIAC contends that the scenarios used to assess the costs and market benefits for each credible option are not reasonable or have not been reasonably weighted. PIAC further states:³⁶

This is because the assumptions and inputs relating to network capital costs, demand forecasts, value of customer reliability and discount rates are incorrect, implausible, or outside of what can be assumed with reasonable confidence.³⁷

For both the NWS and BOP RIT-Ts, PIAC further contends that, either the use of these assumptions or 'unreasonable' weighting of the scenarios, may have materially impacted the timing of the need for future augmentation, relative ranking of the preferred option and/or the basis for any investment, compared to 'doing nothing'.³⁸

Tables 2 and 3 set out the key inputs and assumptions adopted in the three scenarios for NWS and BOP PACRs, respectively.

Table 2: NWS Summary of scenarios, inputs and assumptions

Variable	Central	Low net economic benefits	High net economic benefits
Network capital Costs	Base estimate	Base estimate +25%	Base estimate -25%
Non network capital costs	Base estimate	Base estimate +25%	Base estimate -25%
Demand	Central demand forecast	Low demand forecast	Central demand forecast
New renewable generation in the area	In-service and committed generators from Appendix B.	All in-service committed and advanced generators from Appendix B	In-service and committed generators from Appendix B
Wholesale market benefits estimated	EY estimated based on the step-change 2022 ISP scenario	EY estimated based on the progressive change 2022 ISP scenario	EY estimated based on the hydrogen superpower 2022 ISP scenario
VCR	\$46.88/kWh	\$32.82/kWh	\$60.95/kWh
Discount rate	5.50%	7.50%	1.96%

Source: NWS PACR

³⁷ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 1

³⁸ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 1-2

Table 3: BOP Summary of scenarios, inputs and assumptions

Variable	Central	Low net economic benefits	High net economic benefits
Network capital Costs	Base estimate	Base estimate +25%	Base estimate -25%
Non network capital costs	Base estimate	Base estimate +25%	Base estimate -25%
Demand	Central demand forecast	Low demand forecast	Central demand forecast
New renewable generation in the area	In-service and committed generators from Appendix B.	All in-service committed and advanced generators from Appendix B	In-service and committed generators from Appendix B
Wholesale market benefits estimated	EY estimated based on the step-change 2022 ISP scenario	EY estimated based on the progressive change 2022 ISP scenario	EY estimated based on the hydrogen superpower 2022 ISP scenario
VCR	\$54.54/kWh	\$38.18/kWh	\$70.91/kWh
Discount rate	5.50%	7.50%	1.96%

Source: BOP PACR

In its dispute notice, PIAC also specifically objects to the scenario weightings applied to each of the three scenarios used in both NWS and BOP PACRs. PIAC considers that the scenario weightings used for the high and low scenarios in both PACRs were too high to reflect 'extreme bounds'. PIAC also raised similar concerns in its submissions to both NWS and BOP project assessment draft report.³⁹

For both the NWS and BOP PACRs, Transgrid applied the following weighting to each of the three scenarios which were based on the draft 2022 ISP weightings⁴⁰. These included:

- 52 per cent to central scenario (based on the step-change scenario in the ISP);
- 30 per cent to the low benefits scenario (based on the progressive change scenario in the ISP); and
- 18 per cent to the high benefits scenario (based on the hydrogen superpower scenario in the ISP).

The PACRs also investigated the sensitivity of the results to alternate weightings of 25:50:25 (that is, 25 per cent in the low scenario, 50 per cent in the central scenario and 25 per cent in the high scenario) in line with the weightings used in the PADR as well as a more extreme sensitivity of 5 per cent low, 90 per cent central and 5 per cent high. Under both sensitivities the selection of the preferred option was found to be unchanged.⁴¹

³⁹ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 8

⁴⁰ Transgrid, *BOP PACR*, 30 June 2022, page 11

⁴¹ Transgrid, *BOP PACR*, 30 June 2022, page 65

AER assessment

Selection of reasonable scenarios

In developing reasonable scenarios for a RIT–T project that is not an actionable ISP project, the RIT–T proponent must include any of the ISP scenarios in the most recent inputs, assumptions and scenarios report that are relevant, unless it provides demonstrable reasons for why adding, omitting or varying a relevant ISP scenario is necessary.⁴²

The NWS and BOP PACRs did not fully adopt the ISP scenarios. Transgrid’s low and high scenarios adopt most of the parameters from the 2022 ISP’s progressive change and hydrogen superpower scenarios. However, Transgrid adopted different values of the discount rate and VCR.

This approach was not adequately explained by Transgrid for each of the NWS and BOP RIT-Ts. Specifically, in both PACRs, Transgrid states that the wholesale market modelling has been updated to reflect the assumptions underpinning the draft 2022 ISP but does not acknowledge that the approach of varying the VCR and discount rate in the low and high scenarios are deviations from the ISP. The reasoning for this deviation outlined in the NWS and BOP PACRs appears to be for the purposes of deriving a lower bound and upper bound of net benefits in the low and high scenarios, respectively.

We consider that Transgrid should have provided better reasoning to explain to stakeholders the basis for its departure from the ISP scenarios. In any case, where ISP scenarios are not used, the RIT-T also requires that the RIT-T proponent must form reasonable scenarios as required by the RIT-T.⁴³ Our view is that the requirement for reasonable scenarios requires RIT-T proponents to ensure that each scenario is constructed with internally consistent parameters so that a reasonable range of plausible states of the world is generated.^{44 45} In this context plausible refers to a probable future state of the world.

In support of its selection of reasonable scenarios, Transgrid states that while the central scenario incorporates the best estimate of each parameter, the true value for each parameter in the future could be higher or lower than the best estimate. Transgrid submits this is the rationale for considering both high and low outcomes for each variable.⁴⁶

Transgrid further advised that it considers combinations of parameters included in each scenario to be genuinely reasonable, whilst being at either the ‘high’ or ‘low’ end of plausible values for that parameter. It further expanded on its reasoning:⁴⁷

We considered the combinations of parameters included in each scenario to be genuinely reasonable, whilst being at either the ‘high’ or ‘low’ end of plausible values for that parameter. For some parameters (eg, VCR), the high and low values represent the uncertainty in relation to the true value of the underlying parameter. For others, the value of the parameter will be driven by external factors (eg, economic growth). However, it is plausible to consider that the value of the parameters selected for the

⁴² AER, *RIT-T*, 25 August 2020, paragraph 20

⁴³ AER, *RIT-T*, 25 August 2020, paragraphs 20, 21, 22.

⁴⁴ AER, *RIT-T*, 25 August 2020, paragraphs 20, 21, 22, 24

⁴⁵ AER, *RIT-T application guidelines*, August 2020, page 42

⁴⁶ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (i)

⁴⁷ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (i)

BOP and NWSA RIT-Ts could occur in the same state of the world (eg, recent experience of simultaneously low discount rates and high cost escalation for the delivery of infrastructure) – ie, each scenario reflects a *plausible state of the world*.

Transgrid explains that changing a combination of factors simultaneously within a scenario facilitates a strong stress test of the RIT-T outcome against an upper and lower bound of plausible outcomes.⁴⁸ Transgrid therefore submits that the scenarios reflect a *reasonable range* of plausible states of the world. Houston Kemp (Transgrid's advisors) also comment that the high and low scenarios are chosen to 'stress-test' the RIT-T outcome.⁴⁹ Houston Kemp further comments the high and low scenarios in recent non-ISP RIT-Ts have been constructed to be relatively 'extreme' bookends to stress test the analysis.⁵⁰

While Transgrid's approach is intended to provide a stress test of the outcome for extreme states of the world, such analysis is best undertaken as a sensitivity analysis. This is primarily due to two reasons, as including extreme scenarios:

- means the weighting for those scenarios will be low which necessarily places a very high weighting on the central scenario; and
- can lead to omission of more plausible scenarios from the analysis.

Both of these factors influence the net benefits of the options and therefore the selection of the preferred option. Therefore, for the purposes of scenario analysis, we expect RIT-T proponents to select scenarios that have a reasonable likelihood of arising such that they can capture a reasonable range of plausible states of the world.

We also consider that the parameters used in each scenario are likely to be independent such that these parameters may not be internally consistent in terms of appearing in the same state of the world.⁵¹ As noted by EMCa, the combined probability of all 'low' and all 'high' parameters outcomes is the product of individual probabilities (assuming each is independent) and is therefore likely to be very small.⁵² For example, the low scenario adopts a higher discount rate of 7.5 per cent compared to 5.5 per cent in the central scenario and a lower VCR value in the low scenario compared to the central scenario. In the absence of any explanation, we would expect the discount rate applied to be independent of the VCR value. Therefore, if the probability of a higher discount is considered by Transgrid to be low and the probability of a lower VCR is also considered by Transgrid to be low, then the joint probability of a scenario with both outcomes arising is likely to be very low.

In light of TransGrid not fully adopting the ISP scenarios, we consider Transgrid should have explained to interested parties its reasoning for the parameter values selected in each scenario and how these parameter values constitute an internally consistent state of the world.

In conclusion based on the reasoning provided in the PACRs and the further information provided, we are not satisfied that the scenarios in the BOP and NWS PACRs include

⁴⁸ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (i)

⁴⁹ Houston Kemp, *RIT-T inputs and assumptions slides*, 10 August 2022

⁵⁰ Houston Kemp, *RIT-T inputs and assumptions briefing note*, 10 August 2022

⁵¹ AER, *RIT-T Application guidelines*, August 2020, page 37, explanatory box 1

⁵² EMCa, *Review of the RIT-T project: Maintaining Reliable Supply to the North West Slopes Area*, 2022, page 17-18

scenarios which are consistent with the NER and RIT-T requirements for a non-actionable ISP project. That is, Transgrid has:

- not provided demonstrable reasons to depart from the ISP scenarios in the most recent IASR; and
- in varying from the ISP scenarios, failed to demonstrate that it has adopted reasonable scenarios which reflect a reasonable range of plausible states of the world.

Scenario weights

In relation to the scenario weightings, Transgrid also provided further reasoning upon our request for the use of the weightings applied in both the PACRs.⁵³

We followed the ISP scenario weightings for the associated ISP scenario used for the wholesale market modelling in each scenario. This is consistent with the remainder of the market modelling process which followed the IASR and ISP inputs wherever relevant. The ISP weights were adopted, in part, because we considered stakeholders may expect these weights to be used, given the PACR modelling used the ISP scenarios (the PADR modelling had only adopted the ISP central scenario).

Transgrid provided further sensitivity analysis by changing the weights to 90 per cent in the central scenario, 5 per cent in the high scenario and 5 per cent in the low scenario (in response to the concerns raised by PIAC in its submissions to the PADRs around the high and low scenarios being given too high a weight in the PADR).⁵⁴ Transgrid states that this alternative weighting does not change the conclusions of the BOP and NWS PACRs.⁵⁵ However, given the low weighting of the low and high scenarios, we would not expect this alternate weighting to change the conclusions of the BOP and NSW PACRs, as it will concentrate the weighted results on the positive NPV of the central scenario.

We consider that Transgrid's decision to adopt the ISP weights in the BOP and NWS PACRs is not adequately justified, in circumstances where, as noted above, the scenarios adopted in the RIT-Ts did not use the ISP scenarios.

We recognise that further sensitivity analysis provided by Transgrid confirms that the PACR outcomes do not change under the alternate weightings Transgrid investigated.⁵⁶ However, as stated above, we consider there remains uncertainty as to whether Transgrid has omitted plausible scenarios which may affect the identification of the preferred option. Once Transgrid addresses these matters as part of their amended PACR, we recommend that they also review the appropriateness of the scenario weightings.

3.2 Demand forecasts

PIAC raises concern on the lack of transparency and justification provided by Transgrid in relation to the demand forecasts of future electricity loads assumed in the BOP and NWS PACRs. Given the commercial in confidence nature of the majority of these new electricity loads, PIAC contends that there is a lack of rigour and transparency around the demand

⁵³ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (iii)

⁵⁴ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 9

⁵⁵ Transgrid, *BOP PACR*, 30 June 2022, page 67

⁵⁶ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (iii)

forecasts, with the risk they may be materially inaccurate and therefore impact the ranking and timing of the preferred option.⁵⁷

PIAC submits that considering the high sensitivity of RIT-T preferred options and timing to demand forecasts, the AER should review the load forecasts relied on by Transgrid.⁵⁸

In the NWS PACR, Transgrid includes expected increased demand arising from new and existing loads, including:⁵⁹

- the Vickery Coal Mine extension;
- Narrabri Coal expansion project; and
- the proposed Narrabri Gas Project.

In the BOP PACR, Transgrid includes expected increased demand arising from existing and new loads, including:⁶⁰

- Sunrise Energy Metal
- Parkes Special Activation Precinct; and
- McPhillamy's Gold Mine.

Transgrid states that:⁶¹

In preparing this PACR, we have engaged further with load proponents on the commitment status for key potential loads. Specifically, we have liaised directly with each proponent to determine whether the loads are considered 'committed' or 'anticipated' under the RIT-T, i.e., whether they meet the criteria for these classifications under the RIT-T.

Transgrid confirmed that the BOP and NWS RIT outcomes are sensitive to the inclusion of the spot loads in the demand forecasts. Transgrid submits that:⁶²

- if 'anticipated' spot loads are not included in the BOP PACR, the weighted net economic benefits are negative across all credible options.
- if only the anticipated loads in the low economic scenario for the BOP PACR are adopted the ranking of the options change.
- if the spot loads are excluded from all relevant scenarios in the NWS PACR, there are no scenarios in which investment would be required.⁶³

AER assessment

⁵⁷ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 6

⁵⁸ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 6

⁵⁹ Transgrid, *NWS PACR*, 30 June 2022, page 70

⁶⁰ Transgrid, *BOP PACR*, 30 June 2022, page 71

⁶¹ Transgrid, *BOP PACR*, 30 June 2022, page 30

⁶² Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (v)

⁶³ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (v)

The RIT-T requires a reasonable forecast of demand to be included in relevant states of the world.⁶⁴ The AER considers that a reasonable forecast must include all assets and facilities that exist during the application of a RIT-T, at least initially, and so form part of all relevant states of the world (both with and without the credible option in place and in all reasonable scenarios), as well as capture the future evolution of and investment in generation, network and load.⁶⁵

The RIT-T defines 'committed' and 'anticipated' projects that can be included in the RIT-T modelling.⁶⁶ The RIT-T requires the following criteria to be met for a project to be a committed project and if the relevant party is in the process of meeting at least three of these criteria, the project can be considered as anticipated:⁶⁷

- The proponent has obtained all required planning consents, construction approvals and licenses, including completion and acceptance of any necessary environmental impact statement.
- Construction has either commenced or a firm commencement date has been set.
- The proponent has purchased/settled/acquired land (or commenced legal proceedings to acquire land) for the purposes of construction.
- Contracts for supply and construction of the major components of the necessary plant and equipment (such as generators, turbines, boilers, transmission towers, conductors, terminal station equipment) have been finalised and executed, including any provisions for cancellation payments.
- The necessary financing arrangements, including any debt plans, have been finalised and contracts executed.

The RIT-T recognises that the inclusion or exclusion of particular anticipated projects in a scenario is based on their degree of likelihood of being commissioned within the modelling period. Where the ISP is not relevant, the RIT-T requires the RIT-T proponent to use its reasonable judgement to include anticipated projects in all relevant states of the world.⁶⁸

Houston Kemp states that in determining the demand parameter values for each scenario:

... for each load, the committed portion (if any) was included in the low demand forecast, together with some anticipated load where that appeared highly likely to become committed. The central demand forecast included an additional amount of anticipated demand and some forecast demand. The degree of likelihood for anticipated and forecast load was carefully assessed on a case-by-case basis, taking into account:⁶⁹

- whether the additional load represents expansion of an existing project or a new project; and
- the presence of multiple potential new loads (where it may be reasonable to assume some (but not all) of these may occur).

⁶⁴ AER, *RIT-T*, 25 August 2020, paragraph 24

⁶⁵ AER, *RIT-T application guidelines*, pages 32-33

⁶⁶ AER, *RIT-T*, 25 August 2020, glossary

⁶⁷ AER, *RIT-T*, 25 August 2020, glossary

⁶⁸ AER, *RIT-T*, 25 August 2020, paragraph 27

⁶⁹ Houston Kemp, *RIT-T inputs and assumptions briefing note*, 10 August 2022

Houston Kemp also states that the high demand forecast for the BOP RIT-T assessment also included additional forecast load provided by stakeholders (although below the full amount of the forecasts provided), where that load was considered less likely to eventuate than in the central scenario, but still possible.⁷⁰

The PACRs acknowledge the demand forecast uncertainty but despite this uncertainty both PACRs provided limited information regarding Transgrid's approach to the inclusion of demand parameter values in each scenario. Houston Kemp has provided further information that was not included in the PACRs. Given that the demand forecasts are a key parameter, we would have expected greater transparency regarding Transgrid's approach to the inclusion of these values in each scenario.

In view of PIAC's concerns regarding the lack of transparency, Transgrid commented that the details regarding the demand forecasts have been shared with the AER in confidence.⁷¹ As noted above, we consider that Transgrid should have set out its approach and considerations for the inclusion of the demand forecast parameters value in each scenario. This would have provided more transparency enabling interested parties to engage with Transgrid's construction of its scenarios. We also are not aware that Transgrid shared demand forecast details with the AER before the PACRs were published, and any information provided to the AER does not provide greater transparency to interested parties.

It is also noteworthy that both PACRs suggest that Transgrid considered whether a project is committed or anticipated as defined in the RIT. However, there is no statement on whether loads that fall outside these definitions will be included. It is only from receiving Houston Kemp's further clarification that we understand that some forecast demand over and above anticipated demand was included in the central scenario. This demonstrates that the PACRs were not clear as to Transgrid's approach regarding the demand forecasts and the basis for adopting or adjusting forecast loads in scenarios, including the basis for adjusting forecast loads.

North West Slopes

In reviewing these spot loads, the NWS PACR outcomes are sensitive to the proposed Narrabri Gas Project (NGP).

We also considered Transgrid's reasoning for the inclusion of the NGP in each relevant scenario. Transgrid indicated that it has included stage 1 of the NGP in the low economic scenario and the full project (stages 1 and 2) in the central and high economic scenario. Transgrid also advised that the high scenario is the same as the central scenario on the basis that the high scenario included a project which has now been cancelled.⁷²

Transgrid confirmed that if the NGP spot load (stage 1) is removed from the low economic scenario, the low scenario investments would not be required. Transgrid also advise that if

⁷⁰ Houston Kemp, *RIT-T inputs and assumptions briefing note*, 10 August 2022

⁷¹ Transgrid, *BOP PACR*, 30 June 2022, page 30

⁷² Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.3 (ix)

the full NGP project is removed from the central scenario, the ranking of the preferred option would change.⁷³

We recognise that there is uncertainty as to whether spot loads will occur as well as the timing of these spot loads which would impact on the need and timing of the preferred option. In relation to the NGP, Transgrid acknowledges that should the Western System Pipeline not be installed, this may affect the ability to fully develop the NGP.⁷⁴ A final investment decision has not yet been made and Santos has indicated that this is expected in quarter 4 of 2023. We also understand that the project is also waiting on results from a challenge under native title legislation.⁷⁵ This suggests that there is significant uncertainty as to whether the project will proceed and the timing of the NGP.

Overall, Transgrid states that:⁷⁶

... we have made the reasonable judgement to include the anticipated NGP within the RIT-T scenarios, which includes NGP stage 2 within the analysis in the central and high scenarios.

However, Transgrid has not explained the basis for forming this judgement given the significant uncertainty associated with this spot load.

Transgrid also advises that for the BOP and the NWS PACRs:⁷⁷

The anticipated spot load was included in the low scenario in each case as we judged it to have a high probability of occurring, and in light of there also being several other spot loads and of being a low-end forecast for that anticipated spot load.

While Houston Kemp has outlined the approach for the inclusion of spot loads in the central scenario, we consider it to be good practice for the RIT-T proponent to provide its reasoning when exercising its judgement. Specifically, we would expect Transgrid to be transparent regarding its reasoning on matters that require the exercise of judgement, especially where this judgement is critical to the outcomes, in future RIT-Ts. This will allow stakeholders to better scrutinise relevant assumptions.

We also consider it would have been good practice for Transgrid to provide a sensitivity analysis on the PACR outcomes for the NWS if the NGP project is excluded from the analysis.

Bathurst Orange Parkes

We have also reviewed the spot loads included in the BOP RIT-T and additional information Transgrid provided. This assessment has confirmed that the RIT-T outcome is sensitive to the forecast demand associated with the Parkes Special Activation Precinct (SAP). Transgrid's further analysis indicates that stage 2 of the BOP preferred option (the Wellington to Parkes line) would not be required in the absence of the Parkes SAP.⁷⁸ As with

⁷³ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022

⁷⁴ Transgrid, *NWS PACR*, 30 June 2022, page 70-71

⁷⁵ EMCa, *Review of the RIT-T project: Maintaining Reliable Supply to the North West Slopes Area, 2022*, page 17-18

⁷⁶ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.3 (vi)

⁷⁷ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.1 (iv)

⁷⁸ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022

the NWS RIT-T, we consider Transgrid could have improved transparency by undertaking sensitivity analysis in the PACR given the sensitivity to the RIT-T outcome.

Given the sensitivity of the outcome to the Parkes SAP forecast load, we requested additional information from Transgrid regarding the level of commitment of the assumed spot loads (both Parkes SAP and other forecast loads) against the RIT-T commitment criteria stated above. Based on further information provided by Transgrid, we consider that there remains a high degree of uncertainty with the Parkes SAP forecast load as it does not appear to meet the definition of anticipated load under the RIT-T.

Transgrid recognises this uncertainty and states in the PACR that it intends to undertake a further RIT-T (ahead of committing to the 132 kV Wellington to Parkes line) and will take into account updated demand forecasts at that later date.⁷⁹

3.3 Network capital costs

In its dispute notice, PIAC contends that the network capital cost estimates provided by Transgrid in its BOP and NWS PACR are understated. PIAC states that:⁸⁰

The revealed cost of transmission projects of this scale in the NEM is consistently above the early estimates used in RIT-Ts. Analysis by AEMO has found on average, a 30% increase between early-stage cost estimates and actual capital costs, with the error for some projects being markedly greater. Analysis completed by GHD for AEMO in 2021 found that unknown risks alone resulted in underestimation of transmission infrastructure projects in early-stage costs estimates by an average of 15%.

PIAC further contends that more plausible network capital cost assumptions would be:

- Central scenario: (Original) Base estimate plus 30 per cent
- Low benefits scenario: (Updated) Central scenario estimate plus 25 per cent; and
- High benefits scenario: (Updated) Central scenario estimate minus 25 per cent.

We understand that Transgrid has allowed for cost accuracy of +/- 25 per cent for capital cost estimates of network options which is in line with the cost accuracy range used in analysis by GHD for AEMO in 2021 for class 4 projects.⁸¹ Transgrid states that the capital cost estimates are class 4 estimates. Class 4 may be used where significant engineering design work has been carried out to develop the work scope.⁸²

AER assessment

The RIT-T requires that the costs used in the RIT-T are the present value of the direct costs of a credible option.⁸³ Where there is a material degree of uncertainty in the costs of the credible option, the cost is the probability weighted present value of the direct costs of the credible option under a range of different cost assumptions.

⁷⁹ Transgrid, *BOP PACR*, 30 June 2022, page 14

⁸⁰ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022

⁸¹ GHD, *ISP Transmission Cost Database*, 7 May 2021, page 30

⁸² GHD, *ISP Transmission Cost Database*, 7 May 2021, page 52

⁸³ AER, *RIT-T*, 25 August 2020, paragraphs 5 and 6

Based on the available information, we have found no evidence that supports the view that Transgrid has underestimated the costs of network options in its BOP and NWS RIT-Ts. However, Transgrid did not provide additional cost details, in its BOP and NWS PACRs, regarding cost breakdown or cost methodology for capital costs of credible network options. The RIT-T guidelines consider it good practice for a RIT-T proponent to provide a detailed description of the method used to quantify each class of material market benefit and cost.⁸⁴ In accordance with the RIT-T application guidelines, we consider that greater detail should have been provided around the cost estimation methodology for estimating the costs of the credible options⁸⁵. This includes the approach to estimating risk allowances for cost uncertainty and land related costs.

We sought further information to assess the sensitivity of the estimated capital costs on the PACR outcomes. Transgrid performed additional sensitivity analysis regarding capital costs and demand spot loads.⁸⁶ This sensitivity analysis found that:⁸⁷

- To change the BOP PACR preferred network-only options, the line component would need to increase by \$35.8m (>30 per cent).
- To change the NWS preferred network-only options, the network components (Line and STATCOMS) would need to increase by \$35.6m (>25 per cent).

Transgrid also performed sensitivity analysis for a 25 per cent increase in estimated network capital costs for the credible options in the BOP PACR assuming:

- the demand forecast in the low scenario; and
- no avoided unserved energy after 2027/28.⁸⁸

Transgrid advised that if this sensitivity was applied, the NPV still remained positive. Transgrid also extended this sensitivity and advised that the preferred option delivered negative NPV (i.e., investment should not proceed) only when anticipated demand was removed from the low demand scenario.

Transgrid did not perform any requested sensitivity analysis for the NWS project, stating:

In all scenarios, the removal of anticipated spot loads means that investments would not be required. Therefore, investment would not proceed in any of the reasonable scenarios regardless of a change in capital costs.

We consider that these sensitivities should have been provided in the BOP and NWS PACRs to demonstrate the robustness of the outcomes to the demand forecasts and changes in estimated capital costs. We recommend that Transgrid include such sensitivity analysis in its amended BOP and NWS PACRs to capture the uncertainty associated with estimated capital costs of the credible options.

⁸⁴ AER, *RIT-T Application guidelines*, August 2020, page 63

⁸⁵ *ibid*

⁸⁶ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, Response to question 1.2 (v)

⁸⁷ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, Response to question 1.2 (iv)

⁸⁸ Avoided unserved energy comprises the majority of the estimated benefits. Transgrid removed these benefits after 2027-28 as this simplified the analysis given that unserved energy benefits after 2027-28 are the same across all options in the BOP PACR.

3.4 Value of customer reliability (VCR)

In both the NWS and BOP PACRs, PIAC contends that value of customer reliability (VCR) assumptions does not appear to align with the AER's published VCR values in its Final Report on VCR values, December 2019,⁸⁹ and subsequent annual adjustments.⁹⁰

PIAC further requested that the AER:⁹¹

- Review the load forecasts relied on by Transgrid to determine if they support the VCR estimates Transgrid has adopted.
- Advise if Transgrid's application of AER's +/- 30 per cent confidence in relation to the VCR is appropriate and consistent with AER's intended use.

The AER's RIT-T application guidelines state that RIT-T proponents should use the VCR estimates that we publish and update annually. Further, VCRs used in RIT-T applications should reflect the weighted mix of customers that the option affects, and if applicable, the nature and type of reliability issue being modelled (for example, whether there is a widespread and long duration outage).⁹²

Transgrid stated that the most recent estimates of VCR published by the AER estimate \$26.82/kWh for residential customers in NSW, \$46.18/kWh for commercial customers and \$66.16/kWh for industrial customers.⁹³ Transgrid adopted central scenario estimates of \$54.54/kWh for BOP⁹⁴ and \$46.88/kWh for NWS.⁹⁵

For both NWS and BOP RIT-Ts, Transgrid states that it calculated VCRs for the central scenario consistent with the AER's RIT-T application guidelines and AER's final report on Value of Customer reliability. Transgrid states:⁹⁶

At each location, an average VCR value is calculated based on the proportion of each type of customer – residential, commercial and industrial. The load weighted VCR estimate is then calculated as an average of the VCR at each location weighted by the level of demand, and used in the central scenario for the RIT-T.

Transgrid further states:⁹⁷

Transgrid has been engaging with its Transmission Advisory Committee (TAC) on the transparency provided for inputs for non-ISP RIT-Ts and has agreed to provide breakdowns similar to Table 4 going forward. We note that stakeholders have not previously asked for this information, and it was not requested in submissions to the PADRs for BOP and NWSA.

⁸⁹ The AER sets out the VCR values for unplanned outages of up to 12 hours in duration (i.e., standard outages) for the National Electricity Market and the Northern Territory. In December 2021, the AER released updated Values of Customer Reliability for 2021. <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/values-of-customer-reliability>

⁹⁰ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 6

⁹¹ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 7

⁹² AER, *RIT-T application guidelines*, August 2020, page 26

⁹³ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.4 (i)

⁹⁴ Transgrid, *BOP PACR*, 30 June 2022, page 49

⁹⁵ Transgrid, *BOP PACR*, 30 June 2022, page 48

⁹⁶ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.4 (i)

⁹⁷ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.4 (i)

In its response to AER information requests, Transgrid also provided, for both NWS and BOP PACRs, a breakdown of the specific inputs and calculations used in calculating the central load weighted VCR estimates in more locational detail.

Based on the additional information provided by Transgrid, we are satisfied that Transgrid's calculation of VCR estimates for both NWS and BOP RIT-Ts is consistent with the RIT-T, RIT-T application guidelines and AER's final report on VCR.⁹⁸ However, as the VCR is an important parameter, we consider that Transgrid should have provided the additional information regarding its calculation of load weighted VCR estimates in PACRs for both the NWS and BOP RIT-Ts.

Our Final Report on VCR Values published in 2019, recommended that a +/- 30 per cent confidence bound be applied for the purposes of sensitivity analysis. Transgrid has used this confidence bound to form the VCR values in the low and high scenarios. As discussed above, Transgrid should explain its reasons for varying the VCR across scenarios and this is a departure from the ISP. Alternatively, Transgrid could vary the VCR value as a sensitivity to test the robustness of the PACRs outcomes.

⁹⁸ AER, *Values of Customer Reliability Review - Final decision*, December 2019

3.5 Discount rates

In its dispute notice, PIAC raises concerns regarding the discount rate used by Transgrid in both BOP and NWS PACRs. PIAC contends that the discount rate used by Transgrid in both PACRs for the high economic benefits scenarios is implausibly low for the weighting of 18 per cent given to those scenarios, on the basis that the WACC adopted represents a historically low WACC that is implausibly low for likely future economic and financial market conditions.⁹⁹

PIAC also requested the AER to assess if Transgrid's proposed combination of discount rate and weighting is appropriate for the high benefits scenarios.¹⁰⁰

AER Assessment

The RIT-T specifies that:¹⁰¹

The RIT-T proponent must adopt the discount rate from the most recent inputs, assumptions and scenarios report unless it provides demonstrable reasons why a variation is necessary.

The RIT-T application guidelines also provides expanded guidance:

Where there are demonstrable reasons for why a RIT-T application should employ a different discount rate to that used in the most recent ISP, the RIT-T provides the flexibility to adjust the discount rate to reflect the risks that different types of projects carry. We expect these adjustments would vary between identified needs rather than between credible options to address a specific identified need. It will typically be best practice to capture the relative riskiness of different credible options through scenario analysis rather than by using different discount rates (see section 3.8 on scenario analysis).

Considering the above, as a default, a RIT-T proponent should use the same discount rate for different credible options to address a given identified need. If a RIT-T proponent has a sound reason to depart from this default by using a different discount rate for a particular credible option, it must:

- clearly and transparently provide this reasoning, including providing supporting evidence; and
- show if or how this decision affects the ranking of credible options.

Since the discount rate is a particularly important parameter for estimating the present value of long term projects, we expect RIT-T proponents to explore:

- whether, as part of its scenario analysis, there is reason to include reasonable scenarios with different discount rates.

The RIT application guidelines also state as required in the RIT-T, the regulated cost of capital should be the lower bound; and when sensitivity testing the outcome of its cost benefit analysis, if applicable, illustrate 'boundary values' for discount rates at which the preferred option changes. The RIT-T proponent can then discuss the plausibility of those values and analyse this risk.

⁹⁹ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 8

¹⁰⁰ PIAC, *Notice of Dispute: NWS and BOP PACRs*, 1 August 2022, page 8

¹⁰¹ AER, *RIT-T*, August 2020, paragraphs 18–19

Transgrid, for both NWS and BOP PACRs, adopted a discount rate of 5.5 per cent for the central scenario. Transgrid states that this discount rate is consistent with AEMO's 2021 IASR. Transgrid provided additional weighted NPV results, for both NWS and BOP RIT-Ts, using discount rates of 5.5 percent, 7.5 percent and 1.96 percent applied to the low and high scenarios, respectively.¹⁰²

PIAC has raised concerns over whether the adoption of a recent regulated rate of return in the high scenario is plausible. As stated in the RIT-T, a RIT-T proponent must apply a commercial rate of return and the regulated rate of return can be applied for the purposes of a lower bound.

We are not satisfied that Transgrid's reasoning, to stress test the analysis, for the adoption of varying discount rates across the scenarios adequately explains the basis for departing from a common discount rate across the scenarios in terms of differences in the risk of credible options across scenarios. We are also not satisfied that Transgrid has justified the departure from the ISP in terms of varying discount rates across the scenarios.

However, Transgrid conducted further analysis to apply a common discount rate and confirmed that:¹⁰³

The adoption of a common discount rate between scenarios does not change the rankings of the options for any of the central, upper bound, lower bound or 'updated regulated' discount rates.

Therefore, based on the additional information provided by Transgrid, we are satisfied that the discount rate will not affect the outcomes of the BOP and NWS PACRs. We recommend that Transgrid include such sensitivity analysis in its amended BOP and NWS PACRs to capture the impact of varying the discount rate.

3.6 Consultation Process

Early engagement between stakeholders and the proponent of a RIT-T, and fuller provision of information is essential for the efficient and timely resolution of a RIT-T process.

This dispute may have been avoided if more detailed information and justification about Transgrid's selection of scenarios and adoption of key inputs and assumptions was provided in the BOP and NWS PACRs.

¹⁰² Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.5 (i)

¹⁰³ Transgrid, *Information Request – PIAC RIT-T Dispute*, 16 September 2022, response to question 1.5 (i)

4 AER determination

Under rule 5.16B(d)(3)(ii) of the NER, we determine that, based on the grounds of the dispute, Transgrid is required to amend its PACRs for both the NWS and BOP RIT-Ts **by 1 February 2023**.

In conducting our review, we are not satisfied that Transgrid correctly applied the RIT-T insofar as it:

- did not use the scenarios from the most recent Inputs, Scenarios and Assumptions Report (IASR), and in departing from those scenarios, it did not provide demonstrable reasons for that approach; and
- did not demonstrate that the alternative scenarios selected were reasonable and deliver on a reasonable range of plausible states of the world; and
- did not use a common discount across all scenarios based on the discount rate in AEMO's most recent IASR, and in departing from that report, it did not provide demonstrable reasons for that approach.

To address the above matters, the AER requires Transgrid to amend the BOP and NWS PACRs to:

- include scenarios from the most recent IASR, and only use different scenarios where Transgrid can provide demonstrable reasons for that approach;
- demonstrate if alternate scenarios are reasonable such that a reasonable range of plausible states of the world is generated. In particular, Transgrid should demonstrate that these scenarios comprise of internally consistent values for parameters such that they could reasonably occur in the same state of the world and have weightings that reasonably estimate the probability of the relevant scenario occurring;
- include a common discount across all scenarios in updated cost benefit analysis based on the discount rate in AEMO's most recent ISAR, or otherwise provide demonstrable reasons for why a variation from this value is necessary; and
- include an updated cost benefit analysis, including updated sensitivity analysis, for each credible option for each reasonable scenario and its impact on the ranking of the credible options assessed in the PACR, as required in accordance with the directions above.

Our view is that more transparency would have assisted stakeholders in understanding Transgrid's approach and application of the RIT-T for these projects. We consider that full provision of information is essential for ensuring the transparency and stakeholder confidence in the RIT-T process. While Transgrid did not include certain information in the PACR for confidentiality reasons, more information that was not subject to confidentiality constraints could have been included that would have clarified points of dispute. In this instance, it may have helped prevent this dispute and ensured efficient and timely resolution of the RIT-T process.

Accordingly, we recommend that the amended BOP and NWS PACRs include sensitivity analysis associated with varying the estimated capital costs of the credible options and the discount rate.

We would also recommend that the amended BOP and NWS PACRs include information to enable interested parties to understand the:

- calculation of the VCR values
- methodology used to estimate capital costs; and
- basis for including forecast spot loads across the scenarios.