



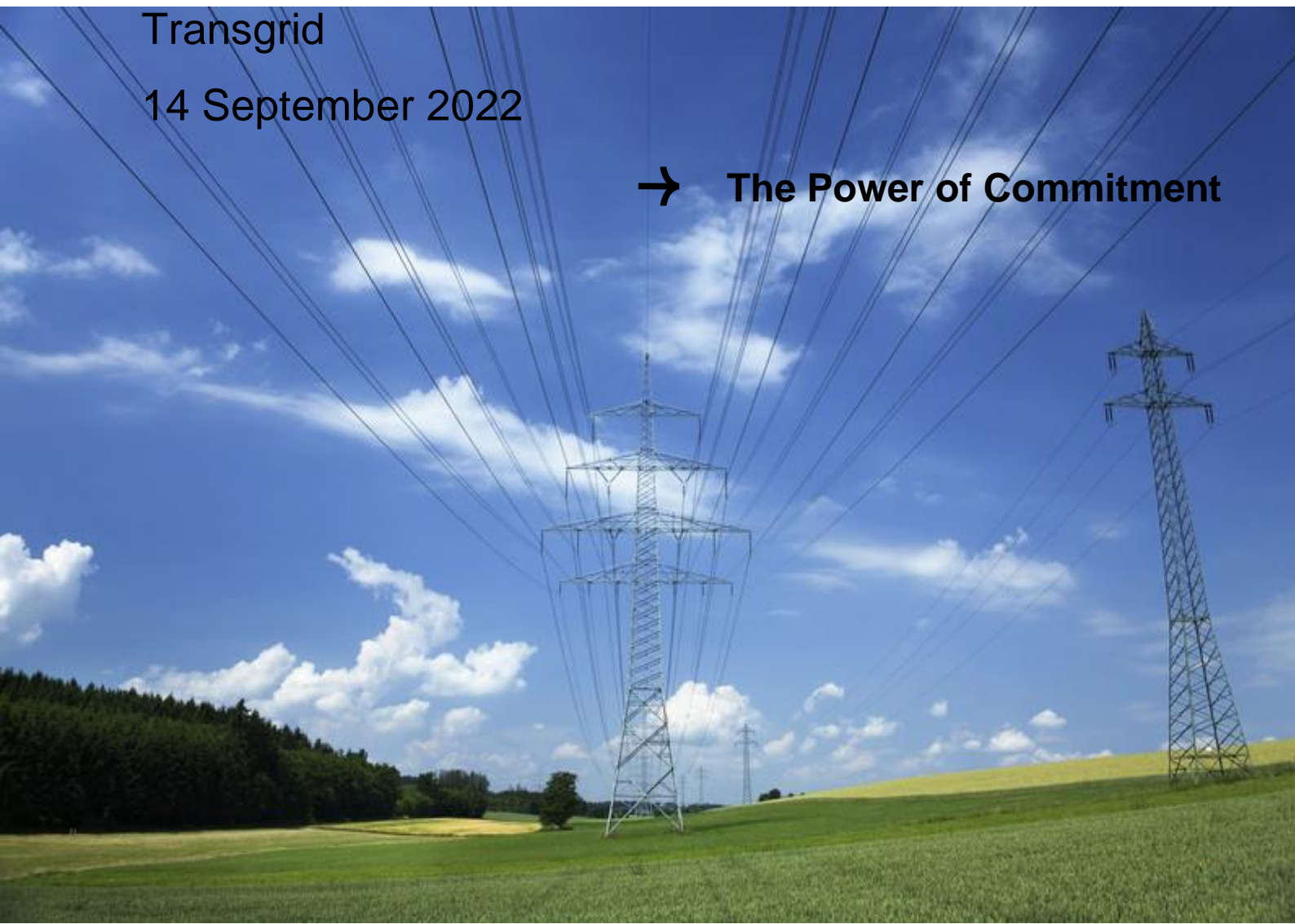
Maintaining Reliable Supply to Bathurst, Orange and Parkes Area

Demand Forecast Independent Verification and Assessment

Transgrid

14 September 2022

→ **The Power of Commitment**



Project name		Demand Forecast Validation					
Document title		Maintaining Reliable Supply to Bathurst, Orange and Parkes Area Demand Forecast Independent Verification and Assessment					
Project number		12592242					
File name		Demand Forecast Validation					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
Draft	1	Tony Loveday	Bruce Clarke				
Draft	2	Tony Loveday	Bruce Clarke				
Final	3	Tony Loveday	Bruce Clarke				14/09/22

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Glossary

AER	Australian Energy Regulator
PACR	Project Assessment Conclusions Report
PADR	Project Assessment Draft Report
RIT-T	Regulatory Investment Test for Transmission

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1.1 Purpose of this report

The purpose of this report is to independently review and verify the basis of the load forecasts used by Transgrid in preparing Regulatory Investment Test for Transmission (RIT-T) reports for areas in their transmission network where future limitations requiring augmentation have been forecast to occur.

1.2 Scope and limitations

This report: has been prepared by GHD for Transgrid and may only be used and relied on by Transgrid for the purpose agreed between GHD and Transgrid.

GHD otherwise disclaims responsibility to any person other than Transgrid arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

GHD has prepared this report on the basis of information provided by Transgrid, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 Assumptions

The following assumptions have been made when writing this report:

- There have been no major changes to the intentions of proponents in relation to spot loads since submissions were made during development of the PACR.

2. Maintaining reliable supply to Bathurst, Orange and Parkes area

GHD has reviewed the process that Transgrid has used to develop the load forecast for Bathurst, Orange and Parkes area against the principles and process detailed in the Australian Energy Regulator (AER) document “Forecasting Best Practice Guidelines¹”. This document was developed to provide guidance to AEMO’s forecasting practices and processes as they relate to their integrated system plan and its updates.

We consider that these best practice guidelines, and in particular Chapter 4: Best Practice Forecasts, would be equally applicable to ensuring that a TNSP has correctly prepared forecasts for the purposes of evaluating the timing and nature of works required to satisfy limitations identified during the RIT-T process.

Best Practice Forecasts sets out three principles that should apply across the forecasting process. These are:

1. Forecasts should be as accurate as possible, based on comprehensive information and prepared in an unbiased fashion.
2. The basic inputs, assumptions and methodology that underpin forecasts should be disclosed.
3. Stakeholders should have as much opportunity to engage as is practicable.

To achieve these principles the following factors should be considered:

- Transparent forecasting methodology
- Consultation
- Reasonable inputs and assumptions
- Transparent drivers of forecasts/effects of inputs
- Scenario and sensitivity analysis for individual forecasts/Constructing scenarios
- Use and disclosure of data

GHD has reviewed each of these factors and documented if and how they have been addressed by Transgrid in the preparation of the Bathurst, Orange and Parkes RIT-T Project Assessment Conclusions Report (PACR) below.

2.1 Transparent forecasting methodology

The methodology used for developing and updating the load forecasts for the area supplied have been clearly set out on Section 2.3 and Appendix B of the PACR. This section details the fact that demand forecasts are the key driver of the identified need for the RIT-T and that these demand forecast have been developed considering the underlying load growth for the area as well as specific customer load developments and in-service and committed renewable generation within the area of interest.

2.1.1 Underlying load growth

The underlying load growth was provided to Transgrid by Essential Energy in their revised general demand forecasts for the region as part of their normal annual update of forecasts. Essential Energy included a mining load that was not previously included in their network but was previously separately considered in the Project Assessment Draft Report (PADR) load forecasts.

2.1.2 Specific spot loads

Specific customer loads were added to the underlying load growth to ensure their impact could be determined.

Specific customer loads considered included:

¹ [AER - Forecasting best practice guidelines - 25 August 2020.pdf](#)

1. Additional information was provided by one of the mining loads (confidential) since the PADR regarding the commitment status of an expansion they are expecting to make has led to an increased amount of load for this mine being included in the central and high demand forecasts.
2. There has been a reduction in the demand forecast of a separate mining load (confidential), which has been reflected in all three demand forecasts.
3. Another mining load (confidential) has provided a revised demand forecast in response to the PADR that indicates a shorter peak demand period and reduced demand at all other times (particularly after 2025/26), which has been reflected in all three (low, medium, and high) demand forecasts.
4. Discussions with the NSW government have resulted in no change being assumed for the Parkes Special Activation Precinct.

The overall effect of the updated demand forecasts since the PADR has been a:

- Reduction in demand forecasts in the Parkes area (particularly after 2025/2026), mainly due to the reduced demand forecasts for two key mine loads; and
- An increase in the demand forecasts in the Orange area, mainly due to the updated demand forecasts of one mine load.

2.1.3 Impact of renewable generation

Transgrid have taken account of in-service, commissioning, advanced and committed renewable generation in the area when assessing the identified need for the RIT-T. Additional renewable generation could assist with addressing/minimising the identified need as it can provide reactive support while generating active power subject to its voltage control strategy.

2.1.4 Review

GHD have reviewed the public and confidential data used by Transgrid and we agree that the forecasts have been developed in a transparent manner that has used the provided data appropriately, assessed the likelihood of projects proceeding in announced timeframes and made adjustments as necessary to the low, central and high forecasts used in the RIT-T analysis that correctly reflects the risks of specific confidential loads proceeding and the loading of the network in the area of interest.

2.2 Consultation

The RIT-T process is inherently consultation focussed with each step being published publicly and feedback being required from any interested parties in response to the published documents.

GHD considers that Transgrid has provided proponents with many opportunities for consultation throughout the RIT-T load forecast process as well as the RIT-T process in general. A number of submissions were made as part of the input to forecasts which stated expected loads as well as progress status of projects. Potential providers of non-network solutions have put forward realistic alternatives to network solutions which have been considered in the recommended outcomes.

2.3 Reasonable inputs and assumptions

The most accurate and relevant data available for inputs might include confidential data and consideration must be given on how to utilise such information while maintaining confidentiality. In this RIT-T Transgrid has used confidential information provided by proponents to develop the load forecasts. This has been done by evaluating the likelihood to the respective project proceeding by determining if a customer project meets the AER RIT-T requirements for a “committed” or “anticipated” project² as well the likelihood of any subsequent stages of the project proceeding, including the ability of the proponent to meet announced timeframes. In this respect Transgrid

² The AER definition of a committed and an anticipated project is provided in Appendix A

modified some of the confidential load forecasts previously used the RIT-T forecast and ensured that the loads used in the low, medium and high load growth scenarios reflected the appropriate level of risk of them proceeding. Throughout the PACR confidential data was included in a manner such that it that would prevent it being determined by analysis of the overall load.

GHD has reviewed the confidential information provided to Transgrid by project proponents in relation to the likelihood of the project proceeding and agrees that an appropriate assessment has been made against the AER definitions for committed and anticipated projects and that the loads associated with those projects have been considered correctly when formulating the load forecasts in in analysis.

Inputs and information should be as up-to-date and comprehensive as practicable, considering publication timeframes and time needed for consultation. Transgrid updated all the load forecasts prior to use in the analysis of the RIT-T PACR from those originally used in the PADR. Proponents also provided updated project loads and project timing. This ensured that the most up to date data that was available at the time was utilised in formulating the report.

2.4 Transparent drivers of forecasts/effects of inputs

The RIT-T process provides a very transparent analysis of the drivers of forecasts, the effects of inputs and how this affects the outcome of the RIT-T analysis. There is no additional assessment of the Transgrid processes required for this factor in load forecasting as they have met the requirements for the RIT-T process and the reporting and consultation required for each phase.

2.5 Scenario and sensitivity analysis for individual forecasts/Constructing scenarios

Transgrid have developed a low, medium and high forecast scenarios for use in the RIT-T analysis. The analysis performed for the RIT-T used a low net economic benefits scenario, central economic benefits scenario and a high net economic benefits scenario. The low net economic benefits scenario employed the low load forecast, the central economic benefits scenario used the medium load forecast and high economic benefits scenario used the high load forecast. Sensitivity analysis was performed on each of the scenarios and the recommended outputs were found to be consistent while varying various input parameters.

GHD considers that the load forecasting and resulting scenario development and analysis used in the RIT-T PACR has been realistic and has provided recommended results which will not change under expected ranges of variation of the input variables.

2.6 Use and disclosure of data

The Forecasting Best Practice Guidelines state that the most accurate and relevant data should be used when preparing forecasts, including, where appropriate, confidential data. It also states that, subject to confidentiality, all key data used in the development of forecasts should be published.

GHD considers that Transgrid meets this requirement by making use of the most recent updated forecasting input data when developing load forecasts of the RIT-T PACR analysis. It also makes appropriate use of confidential data by analysing the probability of the associated projects proceeding and then using that data in relevant forecasting scenarios. Data available publicly was appropriately referenced in the report and/or used within the body of the report and the associated graphs.

2.7 Conclusions

GHD is satisfied that Transgrid has utilised both confidential and publicly available data appropriately to develop realistic load forecasts for use in the PACR for the Bathurst, Orange and Parkes region of NSW. Transgrid have been open with the provision of data for this analysis as well as providing a detailed explanation of the process that was used to formulate the load forecasts. GHD considers that Transgrid has correctly applied the AER definition for committed and anticipated loads to submissions made by proponents in order to develop the load forecast scenarios.

Appendix A – Committed or Anticipated Project

The AER definition of a **committed project** provided in the Glossary of the AER – Regulatory Investment Test for Transmission³ is a project that meets the following criteria:

- 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; and
- the necessary financing arrangements, including any debt plans, have been finalised and contracts executed.

Alternatively, an **anticipated project** is defined by the AER as:

- a project which does not meet all of the criteria of a *committed project* and is in the process of meeting at least three of the criteria for a *committed project*.

³ [AER - Regulatory investment test for transmission - 25 August 2020.pdf](#)



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