



Maintain Voltage in Beryl Area



Demand Forecast Independent Verification and Assessment

Transgrid

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→ **The Power of Commitment**



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Glossary

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

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1. Introduction

Transgrid has included a demand driven project “Maintain Voltage in Beryl Area” within its 2023-28 Revenue Proposal. Given that load data from third parties is confidential, Transgrid has only detailed the consolidated / aggregate demand forecasts.

To further support the assessment of this project, Transgrid has engaged GHD to perform an independent verification and assessment of the projects demand forecasts.

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 or DNSP forecasts since submissions were made during development of the Options Evaluation Report (OER).

2. Maintaining voltage in Beryl area

GHD has reviewed the process that Transgrid has used to develop the load forecast for the Beryl 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 Transmission Network Service Provider 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 Maintain voltage in Beryl area OER 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 in Section 1 of the OER. This section details the fact that demand forecasts are the key driver of the identified need for a solution to resulting voltage and reactive margin shortfall issues in the network and that these demand forecasts have been developed considering the underlying distribution load growth for the area which includes specific customer demand increases.

2.1.1 Underlying load growth

The underlying load growth at transmission Bulk Supply Points has been forecast by Transgrid using load forecasts provided by the DNSP responsible for the area - Essential Energy.

2.1.2 Specific spot loads

Specific customer spot loads were considered by Essential Energy when developing the transmission connection point forecasts. Details of the main drivers of demand growth were provided by Essential Energy to Transgrid. The main reasons for the demand growth has been continuing historical growth of mine sites connected at Moolarben and Wilpinjong as well as advanced progress of additional load at Slate Gully Mine and Moolarben Coal Water Treatment Plant.

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

2.1.3 Review

GHD has reviewed the load forecasts presented in the OER by Transgrid and we agree that the forecasts have been developed in a transparent manner that has used the provided data appropriately. Essential Energy has correctly assessed the likelihood of projects proceeding in the announced timeframes with the amount of load that has been included in the forecasts. Transgrid requested that Essential Energy provide details of the observed demand forecast increases and Essential Energy provided the required detail to ensure Transgrid that the demand forecasts were accurate.

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 relevant parties with appropriate opportunities for consultation to provide input into the load forecast process.

As the RIT-T progresses Transgrid has confirmed in this report that they will consult with potential providers of non-network solutions to seek possible alternatives to the network solutions detailed in the OER which may provide a more economic outcome.

2.3 Reasonable inputs and assumptions

The most accurate and relevant data available for inputs might include sensitive customer data and consideration must be given on how to utilise such information while maintaining confidentiality. In this OER Transgrid has used information provided by proponents connected to the Essential Energy network 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 projects proceeding, including the ability of the proponent to meet announced timeframes. Throughout the OER specific customer load 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 information used by Transgrid to prepare the forecasts in relation to the likelihood of specific projects 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 OER. 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 when developing the OER.

2.5 Scenario and sensitivity analysis for individual forecasts/Constructing scenarios

GHD considers that the load forecasting and analysis used in the OER has been realistic and has provided recommended results which will not change under expected ranges of variation of the input variables. A wide range of network solutions has been considered and those that have not been progressed further have been

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

detailed along with the reasons why they were not considered suitable. Analysis of the optimal timing of the solution has been performed with this showing that the solution should be commenced within the 2023-2028 regulatory control period.

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 OER analysis. It also makes appropriate use of any 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, and Essential Energy, have utilised both confidential and publicly available data appropriately to develop realistic load forecasts for use in the OER for the Beryl 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, and Essential Energy, have 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](#)

