ENERGY ADEQUACY ASSESSMENT

NETWORK OUTAGES IN SOUTH AUSTRALIA

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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

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1. SUPPLY SECURITY

This report provides updated information about the adequacy of electricity supply in the National Electricity Market (NEM) considering planned network outages, variable wind availability forecasts over the next seven days, and rising gas prices.

This latest analysis confirms no regional reliability standard breaches in any NEM region over the next year, provided gas production facilities remain available.

The reliability standard prescribes a maximum of 0.002% of all operational consumption can go unserved for any region in any financial year.

AEMO has assessed energy adequacy using the low rainfall scenario defined in the Energy Adequacy Assessment Projection (EAAP) Guidelines.[1]

1.1 Energy adequacy projections

AEMO's analysis under the low rainfall scenario, which would have the highest impact on the adequacy of electricity supplies, indicates:

- No projected reliability standard breaches in any NEM region over this winter 2016, provided gas production facilities remain available at their historic seasonal production capacities.
- There should be sufficient gas and pipeline capacity to support the maximum gas day demand forecasts in all southern states, if linepack levels are maintained at an adequate level to manage peak demand days.

Any further changes to the supply mix (such as reduced wind generation, unplanned generation outages, or gas supply interruptions) could put South Australian energy adequacy at risk.

1.2 Reliance on gas-powered generation in South Australia over winter

The power transfer from Victoria to South Australia via the Heywood Interconnector will be limited to approximately 50–100 MW over the period from 15 to 23 July, due to a planned outage of South East – Tailem Bend No.2 275 kV line.[2] The outage has a recall time of 12 hours during daytime and 24 hours during night time. There are other planned outages in South Australia over this period, however the South East – Tailem Bend No.2 275 kV line outage determines the power transfer limit on Heywood Interconnector during this period.

The power transfer capability of Murraylink Direct Current (DC) interconnector remains at 220 MW in either direction over this period, except for some reductions due to planned outages in the outer grid of Victoria over the period from 19 to 21 July.[3] These outages can be recalled in two hours if required.

At the same time, South Australia is experiencing highly variable wind conditions (ranging from 20 MW to 1,000 MW in the week from 4 to 10 July), which at times has limited wind generation during periods of high electricity demand in the region.

Similar variability in wind generation is forecast by AEMO's Australian Wind Energy Forecasting System (AWEFS) for the period from 11 to 24 July. AEMO has used the wind generation pattern forecast by AWEFS in the simulations used for this supply reliability assessment.

[1] Based on rainfall between 1 July 2006 and 30 June 2007 for all regions except New South Wales. New South Wales is based on rainfall between 1 June 2006 and 31 May 2007http://www.aemo.com.au/AEMO%20Home/Electricity/Resources/Reports%20and%20Documents/~/media/Files/Other/electricityops/EAAP_Guidelines.ashx

[2] This limit is based on the transient stability considerations on the contingent loss of the parallel South East – Tailem Bend No.1 275 kV line.

[3] Modelling assumed Murraylink support to be 200 MW, to be conservative.

Limited imports from Victoria, coupled with low wind forecasts at times of high demand, will mean that South Australia is dependent on gas-powered generation and a small fleet of diesel generation to meet its electricity demand over July.

1.2.1 Available gas supply

During winter 2016, gas supply has tightened. This has been reflected in high spot market prices (average price to date in July is $17.49/GJ, compared to the longer term average of gas spot market prices of around $4.46/GJ[4]). The tightening supply situation has caused a change in the direction of gas pipeline flows since May 2016, with reduced quantities of gas being exported from South Australia to Queensland, and increased activity at the Wallumbilla Gas Supply Hub.

Utilising gas from Queensland and Moomba to supplement existing south-eastern Australian gas production capacity, there should be sufficient gas and pipeline capacity to support a 50% probability of exceedance gas day demand forecast in all southern states.

1.3 Modelling methodology

This analysis is based on information provided by participants, through the Generator Energy Limitation Framework, for the June 2016 EAAP, with the following changes to assumptions:

- Including network constraints associated with the planned outage of South East – Tailem Bend No.1 275 kV line planned from 12 July 2016 to 13 July 2016.
- Including network constraints associated with the planned outage of South East – Tailem Bend No.2 275 kV line planned from 15 July 2016 to 23 July 2016.
- Updating model to reflect current 8-day ahead wind forecasts as at 11 July 2016.

The analysis is conducted over a one-year timeframe. As the study is probabilistic in nature, AEMO performed 20 simulations (considering various unplanned generation outage states) for the low rainfall scenario, using both 10% and 50% probability of exceedance demand forecasts. From these simulations, the expected yearly regional energy consumption at risk of not being served is calculated and compared against the reliability standard to assess adequacy of supply.

[4] Based on average prices between January 2014 and May 2016.