

Frontier's response to AEMO/ElectraNet information release

PREPARED FOR MACQUARIE GENERATION

This note comments on the information released by AEMO and ElectraNet in response to various submissions and information requests made by interested parties as part of the AER's determination as to whether the preferred option identified by AEMO and ElectraNet satisfies the Regulatory Investment Test for Transmission (RIT-T). This note comments on the data and responses made by AEMO and ElectraNet as published on the AER's website.¹

In a submission prepared for Macquarie Generation and submitted to the AER's determination process², Frontier Economics (Frontier) attempted to verify the magnitude of the gross market benefits reported by AEMO and ElectraNet under Heywood upgrade Option 1b. Having undertaken independent modelling of the proposed Option 1b upgrade – and a detailed assessment of the data and information released by AEMO and ElectraNet in its Project Assessment Conclusions Report (PACR) – Frontier was unable to replicate gross market benefits of a comparable magnitude.

Frontier noted several important additional pieces of data and information that should be released by AEMO and ElectraNet in order to assist interested parties in understanding and interrogating the gross market benefits purported to result from the transmission upgrade. This note responds to the additional pieces of information that AEMO and ElectraNet have released subsequent to Macquarie Generation's initial submission.

Forecast flow-duration curves and constrained-flow distributions

AEMO and ElectraNet have provided charts of flow-duration curves for various forecast years under both the Base case and Option 1b upgrade for flows across the Heywood interconnector. In addition, AEMO and ElectraNet have provided histograms of the number of hours of binding constraints, at different levels of flow, for constraints on the Heywood interconnector both in the Base case and under Option 1b. Frontier would note that we requested that AEMO and ElectraNet release the actual half-hourly forecast **data** for flows and (dynamic) import and export limits for all forecast years under both the Base case and Option 1b upgrade, and that at this time this data has not been released.

¹ Available [here](#) and [here](#).

² Available [here](#).

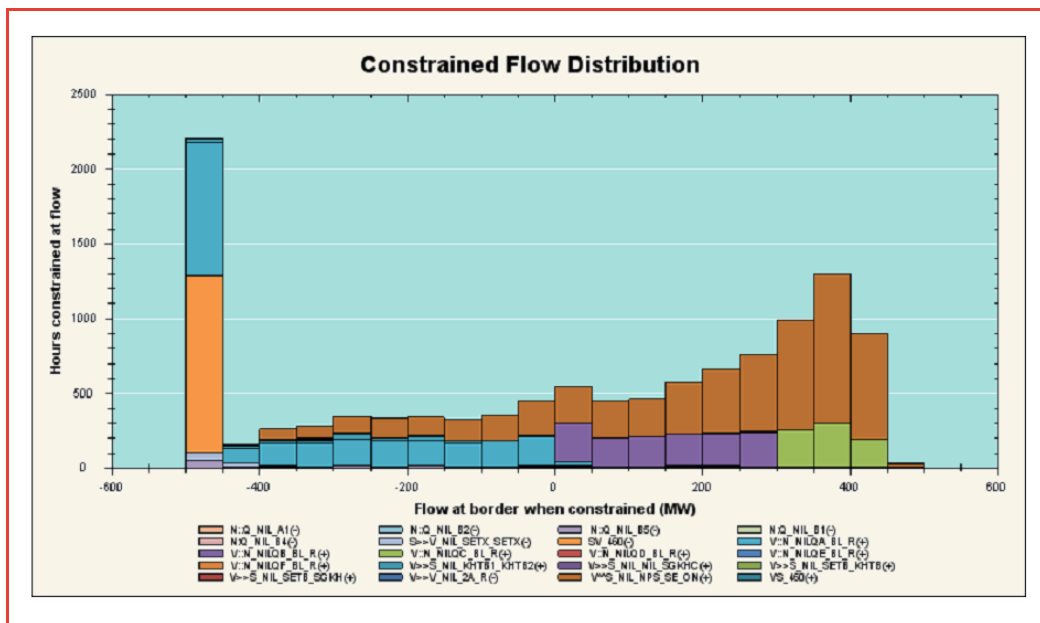
The purpose of releasing forecast flow and limit data is to allow market participants to interrogate and understand how the pattern of congestion between VIC and SA is forecast to change between the Base case and Option 1b upgrade. As noted by AEMO and ElectraNet, the pattern of forecast congestion limiting flows between VIC and SA is a key driver of the level of gross market benefits reported under the various options.

Based on the modelling and analysis performed by Frontier, it would appear that the level of forecast congestion due to intra-regional constraints is overwhelmingly the **major** driver of the purported gross market benefits of the various options. This belief is based on the results of the modelling and analysis undertaken by Frontier, which did not model intra-regional constraints and consequently found a significantly lower level of forecast gross market benefits under Option 1b. This is despite every attempt having been made to use a set of input assumptions that are as consistent as possible to those used by AEMO and ElectraNet in modelling the Revised Central scenario.

In Frontier’s view, given the importance of the pattern of inter-regional congestion driven by forecasts of patterns of binding intra-regional constraints, release of detailed half-hourly modelling outputs that will allow interested parties to understand and interrogate these forecast flow patterns is justified and warranted.

Without having had access to the actual underlying half-hourly flow and limit data, Frontier would note the following with regard to the histograms of binding flows between VIC and SA that AEMO and ElectraNet did provide.

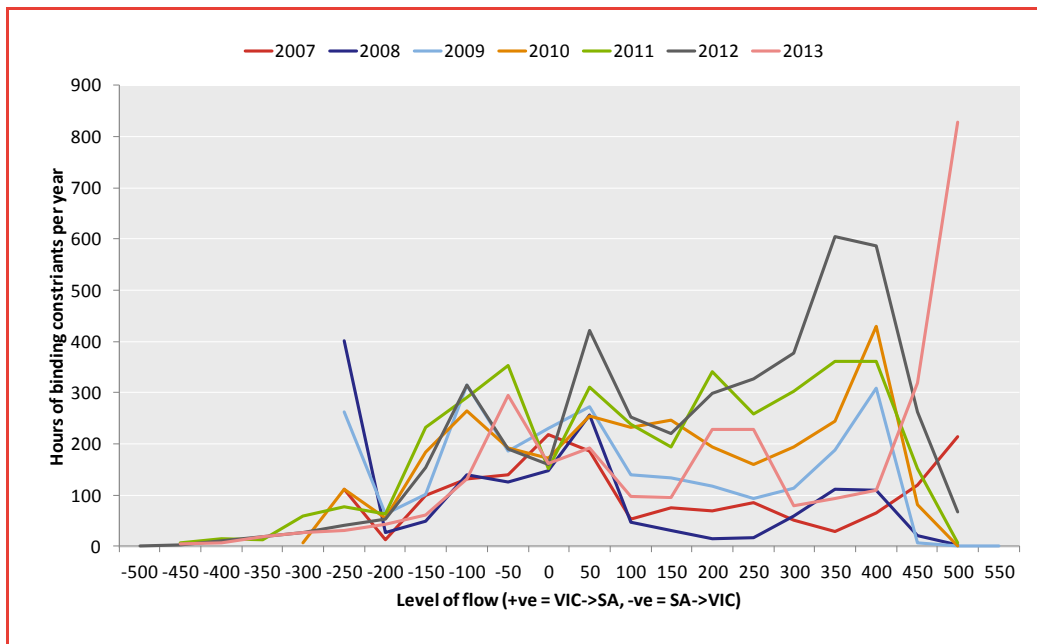
Figure 1: AEMO/ElectraNet forecast of Heywood congestion (2016/17)



Source: AEMO and ElectraNet

First, the level of congestion forecast in the Base case appears to be much larger than that experienced in recent history. Outlined in Figure 1 is a histogram of constrained flows between VIC and SA on the Heywood interconnector under the Base case for 2016/17 as provided by AEMO and ElectraNet. The chart indicates a peak of roughly 1,300 hours a year during which Heywood is forecast to experiencing binding import constraints into SA from VIC. This level of forecast peak congestion is expected to occur at a flow level between 350 and 400 MW.

Figure 2: Historical incidence of congestion on Heywood



Source: Frontier analysis of AEMO 5-minute flow data

Outlined in Figure 2 is a comparable chart showing the historical incidence of congestion on the Heywood interconnector for differing levels of flow between VIC and SA. This data is based on Frontier's analysis of public 5-minute flow and import/export limit data³ over the last 7 financial years. Data for 2012/13 is as of the end of May 2013. Frontier's analysis of the historical incidence of congestion on Heywood is based on taking a count of 5-minute intervals when MW flows are either at, or within a small margin of, 5-minute import or export limits. The analysis suggests that over the past 7 years the average incidence of the level of peak levels of export congestion from VIC to SA have been lower than AEMO and ElectraNet are forecasting: generally on the order of 400-500 hours a year as opposed to roughly 1,300 hours per year.

³ The data accessed by Frontier is available [here](#).

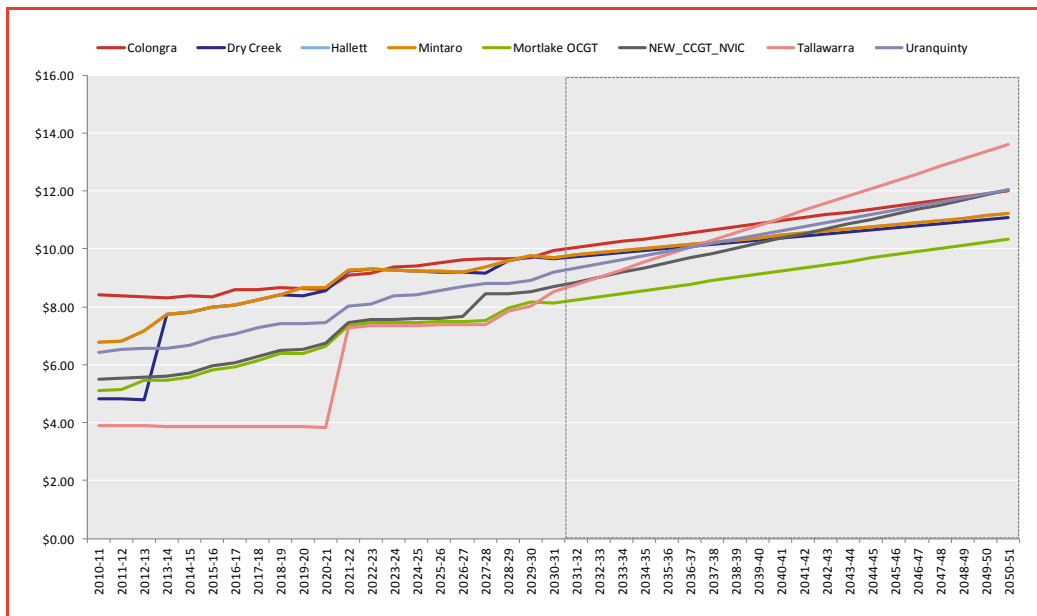
Without access to actual half-hourly flow and import/export limit data it is not possible for interested parties to assess the reasonableness of either the level of congestion forecast in the Base case or how much that congestion is alleviated under Option 1b. Frontier would re-iterate our suggestion that the following **data** be released for the Base case and Options 1b upgrade. Further, we would suggest that the same data also be provided for the Option 4 upgrade, given that this Option should be comparable to the base case we modelled with no binding intra-regional constraints affecting flows between Victoria and South Australia. Accordingly, we request the following additional information be released in respect of the modelling undertaken for the Base Case, Option 1b and Option 4:

- Half-hourly MW flow between VIC and SA for each year of the forecast period.
- Half-hourly (dynamic) import and export limits constraining flows between VIC and SA for each year of the forecast period that are implied by the intra-regional constraints that are being modelled by AEMO and ElectraNet.

Forecast fuel prices

Frontier notes that when extrapolating fuel prices for the period post 2030 AEMO has taken a 10-year average growth rate, as discussed in their information release (Section 1.4). In some cases, this extrapolation has resulted in a very aggressive assumed fuel price trajectory in the period 2030-2050 – an example for several gas plants is outlined in Figure 3.

Figure 3: Extrapolated fuel prices of certain gas plant



Source: Frontier analysis of AEMO and ElectraNet data

In Frontier's view gas prices at these levels are unrealistic, given this level (\$10/GJ+) is far above both a range of forecast LNG netback prices facing the eastern-Australia gas market and forecast production costs of non-conventional CSM gas in Queensland and South Australia. In the long run Frontier would expect one or both of these factors to constrain long-run gas prices at a level below what is implied by AEMO and ElectraNet's gas price extrapolation.