Macquarie Generation

Heywood Interconnector Upgrade

Powering Our Community

8 July 2013

Anthony Bell
Director, Regulatory Strategy & Coordination
Australian Energy Regulator
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By email: anthony.bell@aer.gov.au

Dear Mr Bell

HEYWOOD INTERCONNECTOR UPGRADE – AER DETERMINATION

As outlined in your email of 26 June 2013, Macquarie Generation would like to accept the AER's invitation to respond to ElectraNet's and AEMO's (the 'proponents') response to the AER request for information dated 21 June 2013. The response by the proponents includes commentary on matters raised by Macquarie Generation in our earlier submission dated 31 May 2013 and the accompanying report prepared by Frontier Economics reviewing the proponent's modeling of the proposed Heywood Interconnector Upgrade, Regulatory Investment Test – Transmission (RIT-T).

Before commenting on specific concerns, Macquarie Generation would like to thank the AER for providing external stakeholders with a further opportunity to scrutinise and challenge the Heywood Upgrade RIT-T modeling work through the AER determination stage. The AER is the ultimate arbiter of the quality and soundness of the proponent's RIT-T consultation and modeling work. Allowing ongoing industry input will hopefully contribute to the thoroughness of this regulatory assessment process.

<u>Frontier Economics modeling</u>

Prior to Electranet's application for an AER determination of the Heywood Upgrade RIT-T, Macquarie Generation engaged Frontier Economics to independently assess the gross market benefits of Option 1b under the Revised Central scenario using a consistent modeling framework and the same input assumptions. Frontier's modeling reported gross market benefits in the order of $24 million, less than one-tenth of the benefits modeled by the proponents.

Frontier was of the view that a rigorous examination of the Electranet and AEMO work required more detailed public information on the assumed configuration of intra-regional constraints and the resulting patterns of congestion that limit flows on the Heywood Interconnector at peak times for both the Base Case and the Upgrade Case. To this end, Frontier listed key modeling output data which would assist stakeholders in understanding and interpreting the impact that the assumed intra-regional constraints were having on the estimated gross market benefits, including:

- half-hourly inter-regional flow data between Vic and SA across both Heywood and Murraylink, for both the Base and Upgrade cases;

- half-hourly import and export limits on the flows between Vic and SA across both Heywood and Murraylink which are a consequence of intra-regional constraints, for both the Base Case and Upgrade Case.

Frontier has reviewed the detail provided by the proponents in their response to the AER information request, including the response to the questions listed by Frontier in their detailed modeling report (see accompanying Frontier note). Frontier highlight a number of concerns with the lack of detail provided:

- the AEMO and ElectraNet response provides a high level summary in histogram form of interconnector flow and limit and data – there is no half hourly breakdown of results as requested;
- the proponent's summary information shows congestion on the Heywood Interconnector increasing dramatically in the next few years under the Base Case – some three or more times greater in 2016-17 than that experienced in recent years;
- without half-hourly data it is not possible to interrogate the modeling to isolate when the Heywood Interconnector is congested in either the Base Case or Upgrade Case, and to undertake further investigation of the causes of the significantly increased levels of congestion in the forecast period.

In the interests of enabling a thorough stakeholder review, Macquarie Generation is of the view that the proponents should publish all half-hourly flow and import and export limit data for the forecast period for each of the Base Case, Option 1b and Option 4.

Intra-regional constraints – additional concerns

After reviewing the Heywood Interconnector Upgrade proposal in close detail over recent months, Macquarie Generation has identified a number of intra-regional constraints where we are of the view that the ElectraNet and AEMO RIT-T does not adequately explain how specific points of intra-regional congestion are treated in the modeling exercise or provide sufficient information on whether further augmentation work to relieve the intra-regional constraint is included in the RIT-T project costings. Macquarie Generation would like to take the opportunity to place these concerns on the AER public record. A list of the relevant constraints and a brief explanation of each is provided at Attachment A.

Summary

Macquarie Generation would like to thank the AER for the opportunity to provide further input to its determination of the Heywood Interconnector Upgrade RIT-T.

We are of the view that the AEMO and ElectraNet response to our earlier submission and independent modeling report does not adequately address all of the key questions that were raised.

If you have questions regarding any of the matters raised in this submission, please contact me on 02 9364 3123 or leisl.baumgartner@macgen.com.au.

Yours sincerely

LEISL BAUMGARTNER
GENERAL MANAGER, CORPORATE AFFAIRS

Attachment A: Missing detail on key intra-regional constraints affecting the Heywood Interconnector Upgrade

Issue A1: Safety factors in constraint equations

AEMO routinely builds in a 30 to 40 MW safety factor or margin in all constraint equations used for real time system management. The 2010 NTNDP constraint equations applied in the modeling do not include these safety factors. It is unclear from the PADR whether these safety factors have been included.

Issue A2: Summary of ratings of selected circuits

The Heywood Upgrade RIT-T PACR (Table D-2) contains ratings following the upgrades for various transmission lines which form part of the Heywood upgrade. A footnote to the table indicates that: *"Some of the line ratings on the South Australian side are design ratings and would require plant and protection upgrades to get to the ratings shown above."* Macquarie Generation questions whether these upgrade costs are included in the Heywood project costings.

Issue A3: Victoria – South Morang F2 Transformer

Macquarie Generation understands that constraints associated with the South Morang F2 Transformer were not included in the modeling. Historically, at times of low system demand in Victoria and South Australia this constraint binds for significant periods of time. The Heywood Interconnector has a co-efficient of 1.000 in this constraint equation and flows on the Heywood Interconnector have a significant impact on the frequency of this constraint binding.

Issue A4: Heywood to Southeast Transmission line

Based on transmission line ratings data provided by AEMO on its website, Macquarie Generation understand the ratings of the Heywood to Southeast transmission lines do not allow the transmission of the full 190 MW upgrade in both directions. For example, the 15 minute emergency rating for flow from Vic to SA is only 619 MVa (approx 588 MW) and the rating for SA to Vic is only 529 MVa (approx 503 MW). These are significantly lower than the ratings applied in the RIT-T modeling.

Issue A5: Tailem Bend to Keith No2 Transmission Line

The PADR (Table D2) shows a rating for this transmission line of 178 to 221 MVa. The current rating as provided by AEMO on its website is only 91 MVa. The PADR does not provide information other than to indicate *"some network reconfiguration of the existing 132 KV lines between Keith and Tailem Bend".* The breakdown of costs associated with the upgrade do not indicate costing sufficient for a major upgrade or replacement of this transmission line. All generation contained in the Southeast sub region of SA connects to the Southeast side of this transmission line. Heywood interconnector flows will be impacted by the rating of this transmission line dependent on actual generation output in the Southeast sub region.

Issue A6: Kincraig to Keith and Kincraig to Penola West Transmission Lines

The PADR does not provide the upgraded ratings used in the modeling for these transmission lines. The current ratings for both these lines as provided by AEMO on its website for these transmission line is only 137 MVa. All generation contained in the Southeast sub region of SA connects to the Southeast side of these transmission lines. Heywood interconnector flows will be impacted by the ratings of these transmission lines dependent on actual generation output in the Southeast sub region.

Issue A7: Tailem Bend to Adelaide area

- Tailem bend is connected to the Adelaide area via 3 transmission lines only;
- Tailem Bend to Mobilong 132 KV – rating 173 MVa (approx 130 MW)
- Tailem Bend to Tungkillo 275 KV – rating 476 MVa (approx 452 MW)
- Tailem Bend to Cherry Gardens 275 KV – rating 476 MVa (approx 452 MW)

Details of ratings or constraint equations for this combined transmission cut-set are not included in the PADR.

No constraint equations for this cut-set exist in the 2010 NTNDP constraint equation set.

Installed generation in the Southeast sub region below this cut-set exceeds forecast 10% POE peak demand in the sub region by 200% - based on windfarm output of 30%.

The South Australian Annual Planning Report 2013 (section 5.12) issued by ElectraNet contains details of an upgrade to this cut-set at an expected cost of $150 million to *"accommodate increased interconnector flows"*. Macquarie Generation questions whether actual flows across Heywood would be impacted by constraints in this cut-set such that the flows nominated in the Heywood RIT-T are not achieved. Macquarie Generation also questions whether the additional $150 million cost should form part of the RIT-T assessment.

Issue A8: South West Victoria Voltage Support

The Victorian Annual Planning Report 2013 (section 3.4.2) includes details of several projects to install additional voltage control/support plant at Heywood or Alcoa Portland. The APR also indicates that the need for this is driven by *"generation in the Southwest corridor and Vic to SA power transfers"*. Macquarie Generation is concerned that following completion of the Heywood Upgrade flows between Vic and SA will be less than flows nominated in the Heywood upgrade due to these voltage constraints until additional voltage control/support plant is installed. Any such works should be included in the Heywood Upgrade assessment.

Macquarie Generation

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