AUSTRALIAN ENERGY MARKET COMMISSION

Review of the Snowy regional boundary

Review of the Snowy regional boundary by Snowy Hydro Limited
Review of the Snowy regional boundary by Macquarie Generation

Public Notice on modelling inputs and approach being adopted for Snowy regional boundary Rule change proposals

Information Disclosure Statement

15 June 2006

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Summary

As indicated in its 9 May 2006 *Information Disclosure Statement*[1] on the modelling approach for the Southern Generators' Rule change proposal, the Commission proposes to use market modelling of the NEM to inform its assessment of two competing Rule change proposals relating to the boundaries of the Snowy Region. This paper sets out the analytical framework, modelling methodology and assumptions for the information of interested parties. This modelling analysis is being undertaken and the results of the modelling exercise will be included in the Commission's draft determinations. No additional information on the modelling approach or assumptions will be provided prior to the release of the draft determinations.

Modelling will only be one input into the Commission's decisions, which will be based on the NEM Objective. The Commission will also consider the likely effect of each rule change proposal on the quality, security and reliability of supply; and have regard to principles of good economic regulatory design.

Interested stakeholders are invited to make comment on the data inputs, time horizon, and plant expansion methodology outlined in this Paper. Submissions must be received by 5 pm on 23 June 2006. Submissions can be sent electronically to submissions@aemc.gov.au or by mail to:

Australian Energy Market Commission
PO Box H166
AUSTRALIA SQUARE NSW 1215
Fax (02) 8296 7899

[1] See http://www.aemc.gov.au/electricity.php?r=20051214.200416

1 Introduction

The Commission intends to use quantitative modelling to inform its analysis of the Macquarie Generation and Snowy Hydro proposals to modify the Snowy region's boundaries.[2] These are competing proposals, and the Commission anticipates that quantitative assessment will be an important element in testing qualitative and analytical expectations. This will be the first time a quantitative economic assessment of the merit of alternative boundary change proposals has been undertaken since the commencement of the NEM, and is a significant undertaking.

The modelling approach and assumptions used for the Snowy region boundary Rule changes are similar to those used by the Commission in assessing the Southern Generators' Rule change proposal.[3] This is to ensure consistency in the quantitative approach used to assess inter-related Rule change proposals concerning congestion in the Snowy Region against the NEM Objective.

While the market modelling inputs and approach for the proposed changes to the Snowy Region boundary will be identical in most respects to that used in the assessment of the Southern Generators' Rule change proposal, the following modifications will be made to the modelling framework to reflect the longer time period appropriate for assessment of boundary changes and the implications of the boundary change proposals for constraints, loss factors, and investment decisions:

1. A five year time horizon, rather than the 12 month horizon used in the Draft Determination of the Southern Generators' Rule change;
2. An optimised generation plant expansion scenario (or several scenarios). These plant expansion scenarios would be produced taking account of:
    a) any prospective projects that currently satisfy the 'committed' criteria established by NEMMCO;
    b) economic costs of building different types of plant at different locations in the NEM; and
    c) the transmission network expansion plans incorporated into the 2005 ANTS network constraints that will be provided by NEMMCO.

[2] The proposals are available on the Commission's website at http://www.aemc.gov.au/electricity.php?r=20051214.200700

[3] See Appendix 1 of AEMC 2005, *Draft Rule Determination — National Electricity Amendment (Management of negative settlement residues in the Snowy Region) Rule 2006*, AEMC, Sydney, 6 June 2006.

3. The use of reformulated transmission constraints, static marginal loss factors, and dynamic inter-regional loss equations that reflect the proposed region boundaries. These data will be based on the 2005 ANTS, appropriately reformulated by NEMMCO.

Further explanation of the above issues follows.

2 Additional modelling assumptions — Snowy region boundary change proposals

This section discusses the assumptions for the Snowy region boundary change proposals that differ from those used in the modelling for the Southern Generators' Rule change proposal Draft Determination. With the exception of the items listed below, all the other modelling inputs remain the same.

2.1 Modelling Timeframe

It is proposed to conduct market modelling using a game-theoretic wholesale market model, with both SRMC and game-theoretic bidding assumptions for the first five years of the Snowy regional boundary change proposal – that is, from financial years 2007-08 to 2011-12, inclusive. For the first five years of a boundary change, it is possible to have a reasonable degree of confidence in the appropriateness of the various assumptions employed for market modelling. Beyond five years, game-theoretic market modelling tends to become less informative as assumptions about plant build and bidding become progressively more speculative, particularly regarding the ownership of new plant.

Furthermore, it should be noted that the Commission's intention with regard to the Snowy regional boundary proposals is to establish the appropriate starting point or baseline for the NEM's regional structure, as part of the Commission's proposed transition towards future arrangements for an integrated congestion management program.[4] From this initial baseline, other means of managing congestion would be expected to operate and, if found to be necessary, future boundary changes could take place in accordance with the proposals expected to emanate from the Commission's Congestion Management Review and Regional Boundary Rule change. This suggests that the benefits (if any) of changing the Snowy region should be assessed over a short to medium term timeframe.

[4] For details, see: AEMC 2005, *Congestion Management Program — Statement of Approach*, AEMC, Sydney, 6 June 2006. URL http://www.aemc.gov.au/media.php?article=2

2.2 Plant Build Assumptions

It is proposed that an optimal plant expansion model be used to develop one or more plant expansion scenarios for use in the Snowy boundary change market modelling. These plant expansion scenarios would be produced taking account of any prospective projects that currently satisfy the 'committed project' criteria established by NEMMCO (see NEMMCO, *Connecting New Generation – A Process Overview*, 5 April 2006, section 4.2).

Optimal plant expansion models calculate the system-wide least-cost timing, size and location of new generation plant in the NEM taking account of likely demand growth and other system conditions. The benefit of using such a model is that it is based on objective and transparent assumptions.

Furthermore, the Commission proposes to incorporate the set of 2005 ANTS constraints into the optimal plant expansion modelling. By doing this, the optimal plant build will account for not only the fixed and variable costs of new generating options but also the impact such projects would have on the transmission system. As such the model will place new investment in the most optimal network location, as well as trading off the capital and running costs of the various new options. The ANTS constraints also account for known/committed transmission upgrades across the NEM, and the proposed changes to region boundaries.

2.3 Reformulated constraint equations and loss factors

The Commission intends using constraint equations, static loss factors and dynamic loss equations that reflect the proposed region boundaries. The Commission considers the use of this data is essential to the quantitative economic assessment of the effects of a proposed change in region boundaries because changes in constraint equations and electrical losses affect regional pricing, the spot prices faced by market participants and their short term economic incentives. Over a longer timeframe, changes in spot prices affect longer term investment decisions on where, when, and what type of new investments to make (see Section 2.2 above).

The Commission has requested that NEMMCO undertake the considerable task of reformulating all the constraint equations used in the 2005 ANTS to reflect the proposed changes to the Snowy Regional boundary, together with appropriate reformulations of the dynamic inter-regional loss equations and static marginal loss factors. The Commission has also requested load data, by ANTS zone, to be used in

any quantitative modelling of Macquarie Generation's Rule change proposal, which creates two new regions with load — Northern Victoria and Southern NSW.

3 Submissions Timetable

The Commission recognises the importance of ensuring that the assumptions and data sources used in the modelling are as accurate as possible. To this end, the Commission is seeking views from all interested parties on the data inputs, time horizon, and plant expansion methodology outlined in this Paper by 5 pm on 23 June 2006. Submissions will be published on the Commission's website.

Submissions can be sent electronically to submissions@aemc.gov.au or by mail to:

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