ELECTRICITY TRANSMISSION NETWORK owners

Congestion Management Review

Response to AEMC Directions Paper

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TransGrid ElectraNet electricity transmission Powerlink Queensland TRANSEND SP AusNet A member of Singapore Power Group

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Introduction

ETNOF broadly supports the AEMC's proposed approach to the Congestion Management Review (CMR) as set out in the Directions Paper. This includes the commitment to quantifying the costs and benefits of the various options for better managing congestion, as well as the proposed scope of future work, in line with the terms of reference provided by the Ministerial Council on Energy.

The Directions Paper sets out a two-part taxonomy for describing the various options available for improving congestion management in the NEM. That is:

- the direct management of physical and financial risks associated with congestion; and
- the level of congestion, which may indirectly affect the physical and financial trading risks associated with congestion.

ETNOF agrees with the Commissions observation that the second category of options has already been examined through its review of the economic regulation of transmission services[1]. Further changes in this area at this time are likely to be counter-productive as the new Rules are only now being implemented through the next round of transmission revenue resets.

Notwithstanding ETNOF's general support for the Commission's proposed approach, there are a few matters raised in the paper, specific to the role of transmission network service providers (TNSPs) relating to the direct management of physical and financial risks associated with congestion that warrant input from ETNOF. These include:

1. service incentive arrangements for TNSPs;
2. possible additional information requirements from TNSPs;
3. incentives for TNSPs to pursue constraint relieving investments;
4. options to require TNSPs to underwrite 'constrained on' payments; and
5. new proposals for managing basis price risk in the NEM:
    (a) the possible impact of congestion risk management instruments on transmission system capability development; and
    (b) the lack of quantification of 'firm' risk management instruments.

TNSP experience in relation to the usefulness of these mechanisms for improved congestion management and practical application are addressed in the following sections.

1. Service Incentive Arrangements for TNSPs

ETNOF notes that the Commission has established new transmission revenue setting Rules that provide the AER scope to develop the service performance incentives for TNSPs. Allowing the AER to take this matter forward, in line with these Rules is supported by ETNOF.

[1] CMR Directions Paper, Section 4.1, p33

ETNOF notes that NECA previously considered the matter of TNSP service incentives at length in its Review into the Integration of the Energy Market and Network Services (RIEMNS). The existing NEM Rules include the outcomes of this review and the rationale for these outcomes still holds true today.

Specifically the Rules establish a process for provision of advice on planned network outages to assist market participants in their trading activities. Under the Rules (clause 3.7A), on a monthly basis covering a 13 month outlook, TNSPs are required to provide information on the forecast timing of outages and factors affecting timing. This provides a high level of transparency on the projected status of the network in both the near term and the TNSPs longer term plans, and places considerable discipline on the works scheduling activities of TNSPs.

Arrangements involving TNSPs actively responding to price signals to routinely change outage plans runs counter to the intent of the Rules established by RIEMNS in that they introduce a higher degree of uncertainty for traders regarding the timing and duration of planned transmission outages. There are also important practical issues regarding the design of such a price signal. For example, changes in wholesale pool prices arise after the event, and do not necessarily signal a net economic benefit of rescheduling a transmission outage.

The occurrence of forced and emergency transmission outages is essentially unpredictable, even for TNSPs. No incentive can be provided that effectively encourages these to occur in response to market conditions. However, the AER has already established meaningful incentives to encourage TNSPs to minimise the number and duration of forced and emergency outages. This clearly encourages outcomes that reduce market trading risk arising from transmission outages.

Given the extent to which the existing Rules reflect the outcomes of the RIEMNS review and the existing AER service incentives already address the interaction of transmission outages with the market, the AMEC's proposal to allow the AER to address this matter, in line with existing Rules is sound. The new Rules allow the AER to increase the strength of these incentives if considered necessary.

2. Possible Additional Information Requirements from TNSPs

The Commission's intention to examine further information requirements from TNSPs is supported by ETNOF. However, such consideration needs to recognise that:

- the provision of such information is not costless;
- the information in question must be meaningful and practical to provide to users; and
- information should only be provided on a Rules mandated basis where it can be shown that the required information will not be delivered as a result of competitive forces and/or provision on a user pays basis.

Proposals by some generators for transmission Annual Planning Reports (APRs) to include detailed information on the capability of connection points and the costs to upgrade capability need to be evaluated with these matters in mind. In this regard ETNOF would be pleased to assist in the consideration of specific proposals.

Specifically there is a risk that the regulated provision of information to assist investment decision-making along these lines tends to adopt a lowest common

denominator approach. That is, the same quantity and quality of information is required to be produced, on a regular basis, for every location in the network, even when no investors are known to be investigating that area.

ETNOF notes that such information is already commonly provided to investment proponents as part of the process for making a connection enquiry and is dealt with in an appropriate legal and commercial manner through that process. This has the advantage of being produced on a user pays basis for intending investors at locations where the information is useful and relevant to the specific proposal.

ETNOF also questions the utility of some of the information that appears to be sought. For instance, the Delta Electricity proposal to identify the quantum of additional injection without exacerbating congestion requires assumptions to be made regarding power flows in that area **after** the hypothetical additional injection is made. If the analysis were to be conducted assuming no injection at nodes remote from the subject node the results would be meaningless.

ETNOF suggests that this sort of analysis and information provision is most properly dealt with through the connection enquiry process, as it is currently.

3. Incentives For TNSPs To Pursue Constraint Relieving Investments

The Commission has suggested the possible development of safe harbour provisions covering the modelling used to analyse network augmentations under the Market Benefits Limb of the Regulatory Test. The Commission has noted a perception that TNSPs are reluctant to pursue network augmentations under the Market Benefits Limb. ETNOF is not sure of the analytical basis for this view.

As noted in previous submissions to the Commission, TransGrid and Powerlink have already spent around $1 million attempting to identify options for upgrading QNI that would satisfy the Market Benefits Limb of the Regulatory Test. This does not demonstrate a reluctance to pursue this path as much as the reality of the cost benefit equations involved.

In October 2006 the Commission wrote to Jurisdictional Planning Bodies (JPBs), seeking information on the number and type of Regulatory Test consultations undertaken. This is consistent with the Commission's approach to the CMR to seek out sound factual evidence on which to base conclusions, however there appear to have not been any conclusions drawn on the basis of this information.

As further evidence of the willingness to pursue market benefits driven transmission constraint relief ETNOF puts forward the following examples:

- Gladstone area – Powerlink has previously examined costs and benefits of options to relieve network constraints between Callide and Gladstone. The small differential in fuel costs and the relatively small number of constraining hours (30 hours in 2005/06) makes even modest network investment uneconomic;
- TransGrid recently completed a Market Benefits Limb Regulatory Test consultation on a 132kV upgrade to remove constraints imposed by 132kV system limits on QNI flows. Non-network alternatives were sought through the consultation process for comparison with the base case network option considered with a cost of around $13 million. ETNOF is also aware that at least one market participant previously examined the installation of embedded

generation in the Kempsey area to relieve the flows on feeder 965 and so enhance QNI capability. It is understood that following more detailed load-flow analysis the actual benefits were less than originally thought and that proposal was not pursued. No others came forward during the Regulatory Test consultation. TransGrid is now proceeding with the network investment on the basis that the Regulatory Test consultation failed to reveal more efficient options.

ETNOF considers that the evidence cited above suggests that it is the inherent lack of net economic benefits from constraint relieving investment that is the key impediment to these forms of development being pursued by TNSPs. In this regard, ETNOF notes that the ANTS documents, produced by NEMMCO in recent years, have been unable to establish a prima facie case for material interconnection upgrades. This is not surprising given the emerging evidence, noted by the Commission in the Directions Paper, that overall NEM congestion costs are quite modest in relation to the total traded value of wholesale electricity.

The stabilisation of regulated returns on investment, resulting from the Commission's recent changes to the Rules for transmission revenue cap regulation, have improved the commerciality of all long term transmission investments, including those justified on the basis of net market benefits. As such, concerns about the adequacy of investment incentives have diminished in recent times.

Accordingly, ETNOF does not consider that it is the potential for disputation that has resulted in so few network investments being justified under the Market benefits Limb. As such, the development of safe harbour provisions for analysis under the Market Benefits Limb will not change this situation. Put simply, the Commission needs to be clear on the nature of the problem before proceeding to a solution. ETNOF notes the Commission's intention to rely on sound analysis in coming to a position on congestion management generally and considers that approach should apply equally to this proposal.

On a related matter ETNOF notes that the Directions Paper contains inferences that the use of the Reliability Limb of the Regulatory Test is an elective choice made by TNSPs to provide for network investment earlier than could otherwise be justified under the Market Benefits Limb. This is not an accurate assessment as it is the specification of mandatory reliability standards that effectively oblige TNSPs to invest to meet those standards. The Reliability Limb of the Regulatory Test is an essential part of the regulatory framework for giving effect to standards of electricity supply reliability determined by the jurisdictions. It is neither elective nor discretionary and should not be portrayed as such.

ETNOF notes that mandated transmission reliability standards are generally accepted practice, even in countries where electricity market reform is considered to be advanced e.g. UK, US and most of Europe. Major service failures in recent years such as the August 2003 North East US blackout serve to illustrate that the consequences of inadequate transmission reliability, and have seen these policies generally enhanced as a result. The reliability limb of the Regulatory Test is a vital tool in giving effect to such policies. Furthermore, there is recognised inherent economic merit, and enhanced simplicity benefits, with the appropriate use of least cost evaluations to compare development options, where project benefits are the same or similar.

4. Constrained-On Generation

The Commission has indicated a preparedness to examine options for pricing of constrained-on generation and seeks comment on whether constrained-on payments should be further considered. ETNOF considers that there are two distinct instances where constraining on of generation may be appropriate.

The first instance is the gatekeeper scenario referred to by the Commission[2]. This appears to be referring to those generators known as positive gatekeepers in the material previously developed by Charles River Associates[3]. It appears that payments to a positive gatekeeper could be able to be structured to be revenue neutral to the rest of the market. The funding for the positive gatekeepers increment in generation could be sourced from the increment in the IRSR that results from the higher interconnector flows they facilitate. The IRSR is no smaller than it would be if the additional generation did not occur, hence IRSR holders are not compromised and there is an overall benefit to trade in the NEM. However, this approach, which can only operate in real-time based on dispatch bids and offers, doesn't allow for any economic comparison of alternative network investment options. In addition, the positive gatekeeper can bid according to what the spot market can bear rather than the cost of providing the service. The Regulatory Test limits comparisons between network and non-network solutions to the costs of providing the service thereby maximising the benefits to consumers. If a pure market solution is implemented there is a risk it could lock in and perpetuate economically inferior outcomes in the longer term.

The second instance would apply to situations where there is no increment in IRSR available to fund increments in constrained-on generation. This appears to be analogous to the situation in North Queensland, and more recently, as intended to apply in relation to planned NSW 500kV development where constrained on generation is to be funded to defer line development costs. In these circumstances the question should be framed in the context of alternatives to the constraining on of the existing generation, which is being used for network support services. In these instances it should be considered as a network augmentation alternative and assessed as such, including its service cost, via the Regulatory Test. The Regulatory Test for new network investment provides the appropriate vehicle for deciding which alternative is to be preferred. This could be under either the Reliability Limb (as occurred for the NSW 500kV development deferral) or the Market Benefits Limb, with both limbs having been used by ETNOF members at various times. As the Commission notes, the new Regulatory Test Principles require the consideration of all likely alternatives, without regard to matters such as energy source, technology or ownership[4].

In summary, ETNOF considers that the question of constrained-on payments should not be considered as simply deciding where the funding should be sourced. Instead it should encompass what alternatives exist to constraining on the generation as has already occurred in the transmission revenue setting and investment planning Rules recently established by the Commission.

5. New Proposals for Managing Basis-Price Risk in the NEM

Much of the discussion in the Directions Paper is directed towards increased granularity of pricing, especially for generators, and the use of Constraint Support

[2] CMR Directions Paper, Section 6.1.2.2, p57
[3] NEMMCO Review of Constraint Formulation
[4] CMR Directions Paper, Section 4.3.1.1, p41

Contract (CSC) or Constraint Based Residue (CBR) mechanisms for managing price risk.

ETNOF is concerned that this direction could lead to the situation where price granularity is increased to accentuate investment signals for generators, however this increase in price granularity brings with it a basis price risk that didn't exist previously. Hence it may then seem necessary to introduce a new basis risk management scheme such as CSC or CBR. This is especially so if the newly introduced price granularity includes loop flows that weren't previously explicitly priced.

Thus a well-intentioned decision to improve locational pricing signals for generators could then force further, more significant changes, just to manage the consequences of the original decision.

ETNOF would be particularly concerned if the basis for increasing price granularity was merely the incidence of "mis-pricing", such as has been documented by Dr Daryll Biggar[5].

ETNOF agrees with the Commission that options for change to the NEM arrangements should be proportionate to the materiality of congestion **and its impact** (our emphasis)[6]. That is, the Commission needs to ensure that any 'cure' that may be adopted (increased price granularity), is not worse than the 'disease'. The materiality of the cost of "mis-pricing" and the net benefit of treating this via the CBR approach would need to be demonstrated, taking account of the practical impacts that would arise.

ETNOF is extremely concerned on this point when a number of the proposed mechanisms for providing for basis risk management operate at the level of individual constraint equations. This is in contrast to the current regional pricing arrangements where instruments such as the IRSR operate at the level of a regional interface without regard for the individual constraint that is most limiting. ETNOF considers that there are some real-world practicalities that need closer examination before committing to such schemes.

(a) The Possible Impact Of Congestion Risk Management Instruments On Transmission System Capability Development

ETNOF notes that a degree of inflexibility would be introduced when participants' commercial trading positions become bound up with specific forms of individual constraint equations and the factors that make them up. This suggests that a much more complex and cumbersome governance arrangement would be required in order to introduce new equations, or to enhance existing ones. Matters that would need to be addressed include:

- how often would the rights to residues based on individual constraints be allocated or auctioned?;
- can changes to constraints only be introduced at specific times of the year to align with the residue allocation mechanism?; and

[5] Congestion Management Issues: How Significant is the Mis-Pricing Impact of Intra-Regional Congestion in the NEM?, Darryl Biggar, 25 October 2006

[6] CMR Directions Paper, Section 5, p48

- would holders of rights to residues over specific equations have any right of veto over changes to equations?

At the very least there appears to be a real risk that delays would be introduced in the deployment of new or changed equations. This can only reduce the available transmission capacity as new equations are required as the network develops and increases capacity. If these are delayed then access to increased network capacity could be delayed, possibly increasing inherent levels of congestion and, ultimately, impacting supply reliability. Changes to equations are also often required to accommodate specific network outage conditions. If these changes are delayed then some other existing, more conservative equations will need to be used instead, which will unnecessarily over-constrain network capability.

In summary, ETNOF urges the Commission not to immediately move to increase price granularity as it may trigger the need or desire for further changes that could ultimately result in less efficient outcomes for the market. ETNOF is especially concerned about mechanisms for managing basis risk that operate at the level of individual constraint equations. While such mechanisms appear theoretically elegant and complete, significant further analysis is required into how they could be practically implemented and managed on an ongoing basis.

(b) The Lack Of Quantification Of 'Firm' Risk Management Instruments

ETNOF notes that there is much discussion on the provision of 'firm' trading risk management instruments. This discussion, to date, has not been accompanied by any quantification of the level of 'firmness' or the capacity that can be underwritten by the various proposed instruments on a 'firm' basis. Quantification of these dimensions would appear to be germane to the discussion and consistent with the Commission's commitment to change based on sound analysis.

In his paper setting out the theory of Constraint Based Residues Dr Biggar provides an important caveat in his definition of firmness[7]:

> In this paper, when discussing the "firmness" of a hedging instrument I will be referring to the ability to use that instrument to hedge a given transaction. The total quantity of transactions that can be hedged depends on the physical limits of the transmission network, as reflected in the right-hand side of the constraint equations. The "firmness" of an interconnector is sometimes also used to refer to the level and certainty surrounding these physical limits on the interconnector. **For the purposes of this paper I will put this latter concept of firmness to one side.** In this paper I will say that a hedging instrument is firm if it allows a perfect hedge up to the physical limits of the transmission network. (*emphasis added*)

ETNOF suspects that, given the underlying variability of transmission capability inherent in the NEMDE constraint equations, that the expectations of the level of 'firm' trading risk management hedges available under the various instrument options exceed the practical reality. In this regard it should be noted that, in other markets where such instruments are offered, trading risk is already materially mitigated by the presence of capacity markets. The application of US style financial transmission rights (FTRs) have not been examined empirically in the

[7] Solving the Pricing and Hedging Problems in the NEM Using "Constraint Based Residues", Dr Darryl Biggar, 25 October 2006, Footnote 1

Australian context with an energy only market design and a high proportion of stability related constraints.

ETNOF considers that there are a number of questions the Commission should examine in further detail before reaching any conclusions regarding the efficacy of these sorts of instruments:

- is the level of firmness provided by CBR instruments useful to those parties who trade in the NEM?;
- what quantum of firm financial instruments would the System Operator be prepared to make available under the various schemes, say for Victorian generators to access the New South Wales Regional Reference Price?; and
- what increase in inter-regional trade would these alternative instruments stimulate compared to the existing arrangements?

Summary

ETNOF supports the overall direction the Commission is pursuing through the Congestion Management Review, in particular that any changes to the NEM arrangements should be proportionate to the materiality of congestion and its impact.

ETNOF urges the Commission to:

- note that the existing Rules governing network outage planning reflects the outcomes from the RIEMNS Review and the AER service incentives. In this context ETNOF supports the Commission's proposal to allow the AER to address the matter of service incentives under the existing Rules;
- consult with TNSPs and NEMMCO regarding any recommendations to increase the level of mandatory provision of information. While some parties requests for additional information may well be valid, mandating this provision through the Rules may not be the most efficient and desirable regulatory response;
- note that the fact that few network investments have been able to be justified under the Market Benefits Limb does not imply that TNSPs are reluctant to use that path or consider market benefits in network investment analysis. Rather, it is the relative paucity of net market benefits under the current Regulatory Test that flow from relieving network constraints that makes the economics of such investments unviable;
- consider the issues surrounding constrained-on generation should be considered in the context of what other alternatives are available such as network investment, demand management or new cheaper generation, and not simply as a question of how to fund payments; and
- consider real world implementation issues prior to endorsing greater price granularity which could trigger the need for further more extensive and costly changes in order to manage the changed risk profile of participants. In particular the process and overheads involved in implementing and maintaining a risk management scheme based around individual constraint equations should be thoroughly examined as there are likely to be significant transaction costs and other reductions in efficiency.