Loy Yang Marketing Management Company Pty. Ltd.

AGL Hydro Pty. Ltd.

International Power (Hazelwood, Synergen, Pelican Point and Loy Yang B)

TRUenergy Pty. Ltd.

Flinders Power

Hydro Tasmania

13 April 2007

Dr John Tamblyn
Chairman
AEMC
Level 16, 1 Margaret St,
SYDNEY NSW 2000

By email: submissions@aemc.gov.au

Dear Dr Tamblyn

Congestion Management Review – Directions Paper

Please find attached a submission to the Congestion Management Review – Directions Paper from the above listed group of NEM generators, known as the "Southern Generators".

Despite the fact that the Southern generators could be characterised as a special interest group and it could therefore be in our collective interest in responding to this draft decision to pursue a particular outcome we believe we have taken a balanced and constructive approach in order to assist the Commission in delivering an outcome consistent with the economic efficiency objective in the long term. We are firmly of the view it is not in our long term interests or those of the market to do otherwise.

Collectively as a group of participants we have a wide range of experience in both operating in the NEM, from its inception and being involved in all the changes to the NEM through the regulatory processes.

We make this submission in the hope that it will be constructive in informing and assisting the Commissions decision making process.

If you have any questions regarding this submission please contact Roger Oakley on (03) 96122211.

Yours faithfully,

Roger Oakley
Loy Yang Marketing Management Company Pty. Ltd.
Level 27, 459 Collins Street,
Melbourne, Victoria 3000

(on behalf of the participants listed)

…… **Ken Thompson** General Manager Loy Yang Marketing Management Company Pty Ltd	…… **Alex Cruickshank** Manager NEM Development AGL Hydro Pty Ltd
…… **Ben Skinner** Regulatory Manager, Wholesale Markets TRUenergy Pty Ltd	…… **David Hoch** Market Specialist International Power
…… **David Bowker** Manager Regulatory Affairs Hydro Tasmania	…… **Reza Evans** Manager Energy Policy & Regulation Flinders Power

Congestion Management Review
Directions Paper

Submission from the Southern Generators Group

Loy Yang Marketing Management Co
AGL
TRUenergy
International Power
Flinders Power
Hydro Tasmania

April 2007

Table of Contents

1. Introduction

1.1. Background

The group of six generators listed on the title page of this submission (the "Southern Generators") who represent the bulk of generation capacity south of the Snowy Region are pleased to comment on the AEMC's directions paper on the Congestion Management Review (CMR).

Five generators in this group (the "LATIN" generators) made a submission to the CMR issues paper, describing a "full" alternative to the CSP/CSC arrangements proposed by CRA. Full CSP/CSC appears, *prima facie*, to have some advantages over the CRA approach and the submission recommended that it be considered further in the CMR. Although Hydro Tasmania was not a signatory to that submission, it broadly supports its content[1].

1.2. Structure of this Submission

We support the AEMC's approach of publishing and consulting on a directions paper for this review. It is very helpful for us to see and understand the AEMC's thinking at this early stage of the review and we hope that the AEMC will find our feedback similarly helpful.

We agree with much of the content of the directions paper. Inevitably, this submission focuses on the parts that we disagree with or consider could be further improved. These disagreements arise in two main areas:

- the consideration of the materiality of congestion; and
- the scoping of the review: in particular, the exclusion of a number of potential solution areas.

Section two of this paper considers congestion materiality. We agree with the AEMC that defining and measuring this is crucial to the review, since it will determine which congestion management solutions are necessary or appropriate. In particular, we argue that "materiality" must be considered in relation to the cost and effectiveness of potential congestion management (CM) solutions and so a critical aspect of measuring materiality is to identify solutions and estimate these costs.

Section three considers scoping and focuses on three solution areas which have been excluded: "complete" CM solutions; grandfathering; and provision of pricing signals to new entrant generators. We think these exclusions are not justified by the review's Terms of Reference (ToR) or, more generally, by the NEM objective. By limiting the scope in this way, the AEMC may be ruling out, at this early stage, the best solution - or solutions - for congestion management.

[1] Hydro Tasmania has a position on how the grandfathering principle should be applied in designing the methodology for allocating CSCs which is somewhat different to that set out in the LATIN submission.

Section four considers the various “options for change” proposed in the directions paper. Whilst some options appear preferable to others, we think it is appropriate at this stage of the review for all of the options to be explored further so that their various strengths and weaknesses can be better understood.

2. Materiality of Congestion

2.1. What is meant by "materiality"

Overview

The concept of "materiality" of congestion is a critical aspect of the CMR. A significant part of the directions paper – and most likely a substantial part of the remaining CMR – is dedicated to discussing and analysing it.

Despite this, we do not think that the AEMC has been clear in how it intends to interpret and apply this concept. In particular, we believe that materiality must always be predicated on the cost and effectiveness of potential CM solutions.

Cost-Benefit Framework

The AEMC notes, on page 8 of the directions paper:

> "The frequent reference to "material" congestion in the ToR has been noted by the Commission... All options for permanent change or for the implementation of interim regimes are likely to involve costs as well as benefits. Therefore, whether any option is justifiable against the NEM Objective depends on a comparison of the costs and benefits of the option against the status quo counterfactual – that is, the materiality of pre-existing congestion. The Commission sees no virtue in pursuing changes that increase the complexity of the NEM design without offering corresponding net benefits."

We interpret this to mean that "materiality" has meaning only in the context of the cost of introducing new congestion management mechanisms[2]. So, for example, if a CM mechanism cost $10m, then only congestion costs[3] of above $10m would be considered "material", whereas if the mechanism cost only $1m, then the materiality threshold would instead be $1m[4].

We largely[5] agree with this view, since it is consistent with the NEM Objective. Conversely, any other definition of materiality would be *inconsistent* with the NEM objective. For example, suppose that the materiality threshold was arbitrarily set at $100m, even though a CM mechanism could be introduced for only $10m. A situation might then arise where congestion costs were $50m and considered not to be "material" and so would not be managed, even though this would run counter to the NEM objective.

---

[2] including the indirect costs to NEM participants of consequential changes to systems and processes as well as the direct cost to NEMMCO of implementing and operating the new mechanisms.

[3] in NPV terms

[4] More accurately, it is the *reduction* in congestion costs that is relevant, not the absolute level. If the CM mechanisms only reduced congestion costs by half, the materiality thresholds would become $20m or $2m, respectively.

[5] Our only concern is with the word "pre-existing". the relevant congestion cost is not the *historical* level, but the amount by which it is expected to be reduced in the *future* as a result of the new CM mechanism

In this context, we note the wording of clause 3.1 of the CMR ToR:

> "This review will identify and develop improved arrangements for managing…risks associated with material network congestion…with the objective of maximising net economic benefit…"

This also supports the interpretation that "materiality" is defined in the context of the NEM Objective and its implied cost-benefit framework.

Recognising that even the most trivial changes to NEM design have some consequential costs, there will be some "de minimus" level of congestion impact, below which no change is justified.

Trading Risks

The directions paper, on pages 10-11, notes:

> As indicated in the ToR, congestion can give rise to physical and financial trading risks for market participants. If the market arrangements do not provide participants with adequate means of managing these risks, economic efficiency may be compromised. As the maximisation of efficiency is an important component of the NEM Objective, the Commission considers that inadequacies in the arrangements for congestion management should be addressed in this Review.

We interpret this statement as follows:

A. congestion (or the potential for congestion) can give rise to trading risks
B. these risks may lead to a loss of efficiency
C. the NEM objective is to maximise efficiency
D. therefore, the relevant measure of congestion is the extent to which trading risks caused by congestion lead to a loss of NEM efficiency

In this interpretation, "congestion" could be material, even if transmission constraints never actually bind. The threat of them binding, or changes in strategic behaviour to prevent them binding, may be sufficient to create trading risks which, in turn, lead to a material loss of NEM efficiency.

Again, we agree with this interpretation. It is vital, therefore, that the AEMC's approach to analysing congestion materiality reflects this position. In particular, the analysis should:

- primarily be forward-looking rather than backward-looking
- measure uncertainty of congestion rather than just its average or expected levels;
- consider worst-case scenarios, since these are an important component of trading risk;
- consider how congestion risks are likely to impact on operating and investment behaviours and how, in turn, these may impact NEM efficiency

- consider all aspects of risks associated with congestion, including price risk, dispatch risk and regulatory risk

Summary

We agree with the AEMC's interpretation of the ToR that:

- the term "materiality" is to be interpreted in the context of the cost of introducing mechanisms to manage congestion and, more broadly, in the context of the NEM objective;
- that the relevant measure of congestion is the impact that trading risks caused by congestion – or the threat of congestion – have on NEM efficiency

As a consequence:

- a materiality threshold can only be defined once potential CM mechanisms have been identified and their costs and effectiveness estimated; and
- analysis of congestion should be forward looking and focus on the uncertainty of congestion impacts, not the average or expected level of congestion.

2.2. Characteristics of Congestion

Static and Dynamic Efficiency Impacts

The relevant measure of congestion materiality is the impact of congestion on NEM efficiency. As noted, on page 9 of the directions paper, efficiency can be broken down into three components: productive, allocative and dynamic efficiency. We will also refer to "static efficiency" as the aggregate of productive and allocative efficiency.

Typically, dynamic efficiency impacts are potentially much larger – up to an order of magnitude – than static efficiency impacts. This is because, under "static" assumptions, gains in efficiency can only come about from changes in generation dispatch or customer consumption. Dynamic efficiency impacts can involve changes to the type, location and amount of generation capacity as well as changing trade-offs between local generation and extra transmission (with remote generation). As the IES/LATIN study[6] illustrates, under some scenarios these changes can be quite substantial.

To give another example, the RIEMNS review estimated the efficiency gains of moving to an increased number of regions. Static efficiency gains were estimated to be around $16m/year, whereas dynamic efficiency gains were estimated to be $50-100m/year[7].

Most analysis of congestion undertaken to date estimates static efficiency impacts: for example, the AER analysis, the ANTS analysis and the Frontier modelling for the Snowy

[6] Intelligent Energy Systems (IES), Modelling of Transmission Pricing and Congestion Management Regimes, Report, 22 December 2006.

[7] The scope for integrating the energy market and network services, Draft report Volume 1, NECA, October 2000, P29

Abolition rule change determination. Only the IES/LATIN study has endeavoured to directly estimate dynamic efficiency impacts.

The static/dynamic distinction is important in relation to congestion materiality in two respects. Firstly, of course, if only static impacts are estimated, congestion will appear much less "material" than if dynamic impacts are included. Secondly, the level of dynamic efficiency benefits will depend upon the design of the CM mechanism: in particular, the extent to which the mechanism impinges on investment decisions as well as dispatch decisions. So, congestion might be "material" in relation to a CM mechanism which affects investment decisions, but "immaterial" in the context of an alternative CM mechanism which does not affect investment.

Increasing Trend

As we explained in an earlier submission[8], conceptually one would expect intra-regional congestion to increase over time, from an extremely low level at NEM commencement to an eventual "equilibrium" level once the design and operation of the transmission network becomes "fully national". This is because pre-NEM transmission planning was State based. Under the NEM, though planning has become somewhat more "national", it still has - according to ERIG at least [9] - some way to go. As transmission planning becomes more national, the bias towards intra-state augmentation is gradually removed, inter-state bottlenecks are relieved and new intra-state bottlenecks will develop. Congestion should only be built out once it becomes sufficiently material so as to make transmission augmentation economic, or where it affects customer reliability. As the AEMC acknowledges, jurisdictional standards focus on customer supply reliability and do not otherwise require that transmission congestion is relieved.

This conceptual prediction seems to be borne out empirically, for example in the AER analysis. The key question, of course, is how much further there is to go before equilibrium is reached. We believe that we are still a long way from equilibrium. However, further quantitative analysis is required to confirm this.

The implication of this trend is that historical estimates of congestion impacts have limited relevance to the determination of congestion materiality which, by definition, depends upon future congestion.

Uncertainty and Diversity

Two other important characteristics of congestion are:

- *diversity*: ie a large number of different constraints and constraint locations contribute to the totality of congestion; and
- *uncertainty*: it is hard to predict how much congestion will occur and where;

[8] LATIN Group, Supplementary Submission, Congestion Management Review, 17 November 2006.

[9] For example: "On balance, ERIG [agrees] that transmission planners with reliability obligations within a defined geographic region do not currently face incentives to appropriately consider market conditions in the broader NEM." ERIG Discussion Papers, November 2006, P134.

Conceptually, we can see that this is likely to be the case. Any congestion which is, in contrast, concentrated and predictable is more likely to be managed under current arrangements: eg through region change, network augmentation or outage scheduling. So, in a sense, the "low hanging fruit" is picked, leaving (to mix metaphors) a "long tail" of diverse congestion.

These characteristics are revealed in the empirical analysis: for example in the IES submission[10] and also in the AER analysis[11], which shows an increasing proportion of congestion occurring under network outage conditions.

These characteristics are very significant to the "materiality" of congestion: both the way that it is measured and modelled and the framing of potential CM solutions, for the following reasons:

- uncertainty means that trading risks may be high, even where overall average levels of congestion are low;
- diversity and uncertainty mean modelling must cover a broad range of conditions and scenarios: eg outage conditions as well as system normal conditions must be considered;
- diversity means that "partial" solutions[12] that only manage a subset of network constraints may miss the long tail and therefore only "capture" a portion of congestion; and
- uncertainty means that CM mechanisms which rely on predicting congestion in advance may be ineffective.

For these reasons, it is vital that the AEMC takes care to measure the uncertainty and diversity of congestion and to incorporate its findings into the development and testing of potential CM solutions.

Actual and Potential Congestion

Historical analysis typically only reveals congestion that has actually occurred, not the congestion that might have occurred had operating conditions or decisions been slightly different. However, in relation to efficiency impacts, it is the "potential" level of congestion which may be much more significant, since:

- potential congestion may cause decision-makers (eg generation traders) to change their behaviour in a way that leads to a loss of efficiency
- this changed behaviour may actually be designed to reduce the likelihood of congestion[13] so that "potential" does not become "actual";

[10] IES noted: "there could be a large number of constraints that bind at some stage and have a material impact on the market dispatch of plant" (P10) and that "most of the binding constraint hours are from constraints which do not persistently bind over many months" (P11): IES Submission to Congestion Management Review, 19th April 2006

[11] Table 3.1 of the directions paper, P20

[12] these are discussed further in section 3.3, below

- the ToR requires AEMC to focus on the trading risks relating to congestion: risk is determined by potential conditions – particularly worst-case conditions (eg when using VaR analysis) – as much as actual conditions

Of course, potential congestion is much harder to define, model and measure than actual congestion. Nevertheless, this is an area that the AEMC needs to focus on.

Summary

In analysing congestion impacts and developing potential CM solutions, the AEMC should take into account that:

- dynamic efficiency impacts are typically much larger than static efficiency impacts, so the impact of a CM solution on future investment decisions is important;
- intra-regional congestion is increasing and is likely to continue to increase, so historical levels may have limited relevance;
- intra-regional congestion is diverse and uncertain, so CM mechanisms which rely on prediction and/or which manage only certain constraints may be less effective; and
- trading risks and efficiency impacts are likely to be determined as much by potential as actual congestion, so low levels of actual congestion do not imply that congestion is not material.

2.3. Measuring Congestion Materiality

Approaches to Measurement

There are three different approaches to analysing congestion materiality:

- *empirical*: analysing historical data: for example the AER analysis and the DB/NEMMCO analysis;
- *conceptual*: looking at the rights, obligations and incentives of NEM participants and analysing how, qualitatively, this may affect market outcomes and efficiency; for example the MMA analysis and the LATIN response to it; and
- *modelled*: estimate future congestion materiality using NEM models under a range of NEM development scenarios: for example, the Frontier analysis reported in the Snowy Abolition draft determination.

[13] For example, the draft determination on the Snowy Region Abolition rule change proposal introduces the concept of trading "headroom" whereby strategic generators may deliberately endeavour to prevent constraints binding.

Each of these approaches has its strengths and weaknesses:

- empirical analysis can provide objective estimates of historical congestion, but says little about future conditions[14] and cannot measure "potential" congestion and its impact on efficiency; it is also unable to measure dynamic efficiency impacts, which only occur over long timescales;
- conceptual analysis can provide insight into likely trends and characteristics, but does not provide quantitative estimates;
- models can estimate future and potential congestion, but results are highly dependent on the modelling methodology and assumptions, and susceptible to the "garbage-in-garbage-out" syndrome.

Given this, we think a mixture of all three approaches should be employed by the AEMC.

AEMC Critique of Existing Analysis

In the directions paper, the AEMC reviews and critiques a number of congestion studies as follows:

- On the AER analysis: "given the limitations…the Commission considers that these indicates could be used to observe trends rather than provide a definitive…source of information"
- On the DB/NEMMCO mispricing analysis: the analysis is backward looking and does not calculate the economic dispatch cost of mispricing
- On the surveys of trading risks: the AEMC recognises "the pitfalls of excessive reliance on surveys".
- On the conceptual analyses: the MMA study provides "insight into whether TNSPs are responding to reliability needs…this is one dimension of [congestion materiality]. The AEMC "acknowledged" the points made in the LATIN response but did not respond to them.
- On the NEMMCO ANTS analysis "this does not account for [future] network investment. This means that the information has limited usefulness"
- On the IES/LATIN analysis: "the extent to which the findings are sensitive to those assumptions needs to be fully interrogated before any firm conclusions can be drawn from this work."

The AEMC is rightly sceptical about the rigour or relevance of these historical analyses and we agree with many of the AEMC's points about the shortcomings of the various approaches. However, we are concerned that the AEMC generally does not put forward any proposals about how those shortcomings might be addressed or set out any plans for doing this. For example, the AEMC considers that some further "interrogation" of the assumptions underlying the IES/LATIN analysis is needed, but does not indicate how or when this might be done[15].

[14] given that we are likely to still be a long way from equilibrium
[15] We would be happy to assist the AEMC in better understanding this analysis

In short, we would like to see the AEMC building on the foundation provided by these existing studies, rather than developing its analysis from scratch.

In summary, the directions paper states (on page 31):

> "At this stage, there is no clear evidence before the Commission that mispricing due to system normal constraints is material or is having a significant adverse effect on dispatch efficiency."

This statement is revealing in the light of our earlier consideration of congestion materiality and characteristics:

- materiality is predicated on the cost of CM solutions, so the AEMC can say nothing about materiality until it has identified potential solutions and estimated their costs and effectiveness;
- a large part of congestion materiality is likely to occur under outage conditions or other potential conditions not seen or modelled in the studies; and
- dispatch efficiency impacts are likely to represent only a small proportion of overall efficiency impacts;

Our conclusion from the existing analyses would be that there is strong evidence to suggest that congestion is having an impact on NEM efficiency and that this impact is likely to trend higher. Further work is required to measure this impact and to compare it to the potential cost of introducing new CM mechanisms.

Future Work Program

We would accept the AEMC dismissal of the work to date, if it had put forward a comprehensive alternative. However, the proposed workplan consists of just four bullet points (on page 32 of the directions paper):

- "undertake further analysis to assess the magnitude and materiality of congestion in the NEM;
- extend the analysis of mis-pricing undertaken by Dr. Biggar and NEMMCO to determine what factors have influenced the extent of mis-pricing observed in the data. In particular, the Commission intends to examine whether much of the mis-pricing is being driven by outages, rather than occurring during system normal conditions;
- determine whether there is scope for public reporting by NEMMCO of an annual measure or measures of congestion to inform market participants and improve locational investment decisions by load, generators and TNSPs; and
- assess whether historical congestion is a sufficiently large problem to justify adopting one of more options for intervention options to manage congestion, as discussed later in this paper".

This work program:

- is very high level: for example, it does not indicate how AEMC intends to undertake the "further analysis"
- fails to build upon existing work – except in relation to extend the mis-pricing analysis which the AEMC anyway considers to be flawed;
- mainly adopts the empirical approach; we believe that this is likely to be less fruitful or relevant than the conceptual or modelled approaches
- fails to explain how it intends to measure trading risks and efficiency impacts

The work program is also noteworthy for not drawing on the modelling carried out by Frontier Economics in relation to the Snowy Abolition rule change determination. This work used sophisticated models to estimate the impact of alternative congestion management mechanisms (ie new or changed region boundaries) on dispatch, pricing and trading risks. This work would seem to provide a useful starting point for modelling static efficiency impacts, at least.

Summary

We are concerned that the AEMC's analysis of and plans for measuring congestion, as set out in the directions paper, are inadequate and incomplete:

- the plans do not reflect the likely characteristics of congestion impacts;
- the AEMC usefully critiques existing studies, but fails to build upon these studies;
- the AEMC's work plan is high-level and focuses on measuring historical, actual, static efficiency impacts, whereas future, potential, dynamic efficiency impacts are likely to be much larger
- the AEMC fails to draw upon the most extensive analysis of congestion impacts carried out to date: the Frontier Economics work.

2.4. Summary

Defining and analysing congestion materiality is a critical component of the CMR. In this respect, we would have expected that the AEMC's plans for doing this would have been set out in more detail and that these would have built upon existing congestion analyses.

As this has not been done in the directions paper, we would hope that these plans will be developed and revealed in a subsequent paper, to allow stakeholders to comment on the intended approach prior to the work being carried out.

3. Proposed Scope of Review

3.1. Overview

We are disappointed to see that the AEMC plans to exclude a number of potential CM solutions from further consideration in the CMR. Whilst we acknowledge that the scope of the CMR needs to be carefully managed, this should not mean excluding potential solutions before they have been properly considered on their merits. Furthermore, we do not support or accept the reasoning for the exclusions.

Specifically, we are concerned that the following potential solutions have been excluded:

- all "complete" solutions: ie those solutions which can manage all current and future congestion without further development or regulatory intervention;
- grandfathering of existing generators against the commercial impacts of new CM mechanisms; and
- use of congestion prices to provide efficient incentives to the location of new investment

We would emphasise that we are not, at this stage, arguing that these represent the best CM solutions and should be adopted and implemented, simply that they should be given a "fair go" and properly considered and evaluated in the remainder of the CMR.

3.2. Context of Review

Overview

The MCE's terms of reference (ToR) for the CMR are very brief: essentially just three paragraphs[16] are used to describe the conceptual scope of the review. The AEMC has interpreted the ToR in a very specific way, which we disagree with. To help in resolving this disagreement, we consider in this section how the ToR was developed in the context of MCE policy development on transmission and how this context can help to ensure a credible and robust interpretation of the ToR.

Region Change Policy

The need for a review to identify and develop new CM mechanisms is a direct consequence of the MCE policy on region change. The original NEM design was that material intra-regional congestion would be addressed through region change, meaning there was basically only one CM mechanism: a region boundary with the associated pricing and trading infrastructure.

[16] Paras 3.1 to 3.3 of the terms of reference

The MCE foreshadowed its new region change policy in clause 4.3(c) of a report to COAG in December 2003:

> "The MCE agrees that jurisdictional boundaries should be maintained for retail customer pricing. However, a new and more transparent process is required to enable assessment of regional boundary changes for the wholesale market to facilitate investment and more efficient operation of the NEM. This process will ultimately be managed by the AEMC. As a first step, the MCE will commission an independent economic study to develop the criteria and process for boundary changes, and initial boundary change options, to report to the MCE by June 2004. The boundary change process must include sufficient lead time to address commercial and economic considerations. This initial review will involve wide market consultation."

The economic study was subsequently undertaken by Charles River Associates (CRA) in 2004. The terms of reference[17] for this study stated that:

> "The purpose of the economic study will be to:
>
> - Review and develop proposed regional boundary criteria and means of managing network congestion consistent with the policy direction set by MCE.
> - Develop options on a mechanism for changing wholesale regional boundaries or other means of transparently and consistently managing network congestion in the NEM.
> - Recommend a revised mechanism for wholesale regional boundaries and the criteria underpinning it, having regard to the objectives outlined below.
> - Provide a basis to enable the AEMC to progress changes to the Code to implement a revised mechanism for wholesale regional boundary changes.
>
> In this regard, there are currently several potential options for changing the wholesale structure of the NEM including but not limited to:
>
> - Work undertaken by NEMMCO, including on constraint formulation;
> - Previous CRA study which developed a "gatekeeper" proposal;
> - A proposal to examine nodal pricing for generators."

So, at this point, the MCE recognised that new intra-regional CM mechanisms may be required to complement the new region change policy and, furthermore, that there were a number of potential solutions including:

- revised approaches to constraint formulation;
- a "gatekeeper" approach (which CRA later generalised into CSP/CSC); and
- a "generator nodal pricing" approach: ie the "policy pragmatic" model whereby generation would be priced nodally and be allocated fixed hedges to the regional reference node (RRN), whereas demand would continue to be priced regionally.

[17] National Electricity Market – Regional Structure, Terms of Reference, 27 January 2004, pages 2-3

2005 Transmission Statement

CRA provided a draft report to the MCE in 2004 and this was finalised in 2005. The final report has not been published, but it informed an updated MCE policy on congestion management which was published in a May 2005 Transmission Statement[18] . It is worthwhile presenting this policy here in full:

> "The MCE commissioned an independent economic study from Charles River Associates (CRA) to develop criteria for regional boundary changes. The draft CRA study has been presented to the market together with a number of recommendations. In response to the draft report the MCE has formed the following views:
>
> - *Regional Structure* - The regional structure for the wholesale market should be stable, based on current boundaries and with robust economic criteria to support incremental change as required. MCE accepts CRA's advice that no material efficiency benefits would be gained from a nodal pricing approach at this stage of market development.
> - *Frequency of Boundary Change* – The existing process of annual boundary reviews will cease. Two alternative options will be considered by the MCE: periodic reviews with a longer interval between reviews (eg. the 5-yearly cycle recommended by CRA); or boundary change assessment by application (eg. participants would apply to the AEMC for a review of regional boundaries under the formal regional boundary Rule change process). The MCE supports giving advanced notice of a boundary change to allow registered participants the opportunity to adjust their contract trading positions and minimise their commercial risk.
> - *Change Criteria* – Criteria to amend boundaries should be forward looking and economically based. A net improvement to the efficiency of dispatch is considered a reasonable basis for the revised criteria. The MCE will undertake further work to refine the thresholds which will trigger a change. This will be reflected in the Rule change to be initiated by the MCE. There will be consistency in the economic criteria used for assessing regional boundary changes and for assessing transmission investment.
> - *Constraint Equation Formulation* - All constraints should be developed in a consistent form. A form of constraint equation that allows NEMMCO to control all the variables (i.e. fully co-optimised direct physical representation) should be adopted by NEMMCO.
> - *Dispatch Efficiency* - The MCE supports, as an interim measure, the current arrangements enabling NEMMCO to manage the occurrence of negative settlement residues, consistent with the current Code derogation (which has been extended to December 2005).
> - *Inter-Regional Congestion Management* - The MCE, in its report to COAG of 11 December 2003 recognised the desirability of further developing inter-regional financial trading instruments. The MCE will direct the AEMC to consider the requirement for and scope of enhanced inter-regional trading arrangements following completion of the regional structures review, and taking into account the results of the Snowy trial, provided industry are consulted and broadly supportive.
> - *Intra-Regional Congestion Management* – The MCE considers that there may also be merit in the introduction of financial instruments to manage intra-regional congestion including that which affects major national

[18] MCE, Statement on NEM Electricity Transmission, May 2005, pages 4-5

> flowpaths. The MCE will direct the AEMC to further investigate efficient financial trading arrangements in the NEM, including proposals in the CRA study in relation to congestion management and pricing. "

This statement reveals that on certain issues the MCE had come to a clear and specific policy position: specifically that

- (full) nodal pricing[19] was ruled out;
- the CRA recommendation for "incremental" region change was supported;
- constraints should be formulated in a "fully optimised" form which directly represented the physical constraint;
- that congestion should be managed through "financial instruments" and, by implication, not managed through changes to physical dispatch, except as an interim measure to manage negative residues;

However, in other areas, the MCE was undecided. In particular, the MCE felt that further consideration of intra-regional CM mechanisms was required. It placed no explicit restrictions or limitations on what potential mechanisms should be considered, although implicitly these would need to be consistent with the specific policy on region change.

The AEMC work foreshadowed in the statement became the CMR. Indeed, the statement was published just 5 months before the CMR ToR were issued. Thus, the statement – and the historical context in which it was developed – provides helpful guidance on how to interpret the ToR: specifically:

- the only CM option that was explicitly ruled out as a result of the CRA project was full nodal pricing;
- thus, implicitly, the generation nodal pricing option which was "on the table" prior to the commencement of the CRA project remained on the table at its conclusion: if the MCE wanted to exclude it, it would have said so[20];
- whilst the MCE clearly felt that the CRA proposal (of CSP/CSC) was worthy of consideration, it was not supported to the extent that other potential solutions should be excluded.

This is not to say that the AEMC should not, as part of its "winnowing" process, progressively rule out potential options as it carries out the CMR. However, it does imply that the AEMC should not use the ToR as a justification for doing this. It was clearly not the intention of the MCE to exclude any options in the ToR, except those explicitly ruled out in the Transmission Statement.

[19] We agree with the AEMC position that the MCE reference to "nodal pricing" means nodal pricing for generation and load and so does not include generator nodal pricing.
[20] Although, for some reason, CRA did not investigate the generator nodal pricing option.

Recent Developments

Since the 2005 Transmission Statement, there have been some further developments in the analysis and understanding of congestion management which the AEMC should take into account in interpreting the ToR and defining the scope of the CMR:

- modelling carried out for the Snowy Abolition determination has shown how increasing the number of pricing points in the NEM can improve dispatch efficiency and reduce trading risks;
- the Snowy Trial has been implemented and – by all accounts - has operated successfully;
- the southern generators rule change has been successfully developed and implemented as an alternative to NEMMCO intervention to manage negative settlement residues;
- some further shortcomings of region change have been identified: specifically, the problem of placing a region boundary across a transmission loop[21] and the time and cost involved in implementing region change[22]; and
- the ERIG has been constituted and has reported to COAG.

The most relevant conclusions and recommendations from ERIG[23] are that:

- substantial impediments to the development of a fully national grid remain: in the context of the CMR, this implies that intra-regional congestion continues to be suppressed, as discussed earlier; and
- price incentives to encourage the efficient location of new generation are poor and should be addressed.

We understand that ERIG's report will be considered by COAG in April 2007. Therefore, we think that any consequential revisions to COAG/MCE policy should be able to be accommodated within the CMR. For this reason, the AEMC should be very cautious in scoping the CMR, to ensure that its does not pre-emptively rule out potential solutions to address these new policy issues.

We think that the AEMC should adapt the emphasis – if not the scope – of the CMR to accommodate and reflect these recent developments. In particular:

- it should recognise the possibility that region change may be even more infrequent than envisaged by the MCE; perhaps to the extent that no future changes are made to existing regions, reflecting the relatively high cost of region change versus the relatively low cost of alternative (intra-regional) CM mechanisms;

[21] For example, in the "split region" option for region change, the AEMC has decided – and Macquarie Generation, the change proponent concurs – that the RRN for the "Murray" region should be located at Dederang, to mitigate this problem.
[22] as articulated in NEMMCO's letter to the AEMC on 5th March 2007
[23] drawn from the Discussion Papers. The final report to COAG has not be made public

- it should ensure that it considers CM solutions through which congestion prices are signalled to potential entrants as well as existing NEM participants; and
- it should factor COAG's desire for a "fully national grid"[24] into its measurement of future congestion.

Summary

MCE policy on congestion management has been very clear. Indeed, much clearer than the CMR ToR itself. In particular:

- region change policy is specific and detailed; policy on intra-regional congestion management, on the other hand, remains at a strategic level;
- the MCE has in the past been explicit where it considers that potential CM solutions should be ruled out: eg nodal pricing, changes to physical dispatch etc. Conversely, where the MCE has not been explicit, it should be assumed that it has not ruled out potential solutions;
- the AEMC should be mindful of this in interpreting the ToR. In particular, it should be cautious in drawing policy inferences from the wording of the ToR that are not supported by explicit statements of MCE policy;
- the AEMC should recognise the possibility that there will be no future region changes, meaning that new CM mechanisms may be required to manage *all* material intra-regional congestion ; and
- the AEMC should be mindful of the ERIG recommendations to COAG – and the possible policy changes flowing from these – in scoping the CMR.

3.3. Exclusion of Complete CM Solutions

Overview

The area of "de-scoping" that most concerns us is the ruling out of "complete" CM solutions. By this, we mean solutions that have the potential to manage all current and future congestion – wherever it may occur – without further development or regulatory intervention.

There are a number of possible complete solutions:

- full CSP/CSC as proposed by the LATIN group[25]
- generation nodal pricing
- a "complete" constraint-based residues (CBRs) approach[26]

[24] As defined and described in the terms of reference for ERIG
[25] LATIN Group submission to the CMR issues paper, April 2006
[26] CBRs are described in the paper: "Solving the Pricing and Hedging Problems in the NEM using Constraint-based Residues", Darryl Biggar, 25th October 2006. A CBR approach could be either partial or complete.

In ruling these out, the AEMC has confined the CMR scope to considering "partial" solutions, whereby only existing congestion is explicitly priced and managed and, should congestion develop elsewhere in the future, a regulator (eg AEMC or NEMMCO) must decide whether to explicitly price/manage this new congestion

Partial solutions include the CRA CSP/CSC approach, partial generation nodal pricing or a partial CBR approach. The use of region boundaries to manage congestion is also a partial solution in this context.

We object to the AEMC's scoping decision on a number of grounds:

- we do not think it was the intention of the MCE, in drafting the ToR;
- the AEMC has not properly taken the cost characteristics of complete CM solutions into account in applying its "materiality" requirement;
- the characteristics of congestion may mean that partial solutions are relatively ineffective in managing the majority of congestion.

These objections are discussed further below.

Interpreting the CMR Terms of Reference

In the directions paper, the AEMC is somewhat elliptical in setting out its rationale for excluding complete CM solutions. Its reasons seem to be founded on a concept of "specified instances" of material congestion. Thus, it notes, on page 66 of the directions paper, that:

> …the [CMR] is intended to address trading risks associated with the emergence of *specific instances* of material congestion (our emphasis)

and then on page 68:

> [the CMR should only develop responses to] the emergence of *identified instances* of material congestion (our emphasis)

In our view, this concept was not intended, implied or envisaged by the MCE, whose sole criterion was "materiality". We believe that, if the MCE had intended to restrict congestion management to "specified instances" it would have included this concept in the ToR and defined it accordingly.

A clue to the rationale for the AEMC's interpretation of the ToR appears on page 53 of the directions paper:

> "The reason for investigating the technical feasibility of localised implementation of targeted congestion pricing mechanisms, such as CSP/CSC, is that the CMR ToR specifically requires the Commission to identify options that could be applied to manage material congestion *until it is addressed by investment or regional boundary change* (clause 3.2)". The Commission was not asked to develop a regime for long term market-wide application." (the AEMC's emphasis)

Thus, the rationale for the AEMC interpretation, as we infer it, would be as follows:

A. the CM regime applies to material congestion prior to it being addressed by investment or region change;

B. thus, the CM regime should *only* apply to congestion which is to be subsequently addressed by investment or region change

C. for congestion to be addressed by investment or region change, it must be identified and appropriately specified;

D. therefore, the CM regime can only apply to identified, specified instances of congestion

We do not believe that this was the MCE's intention. Firstly, it appears to conflict with the NEM objective, since it implies that material (but not "specified" or "identified") congestion should *not* be managed, despite the requirement of the NEM objective and of clause 3.1 of the CMR ToR.

Secondly, there is an alternative, simpler interpretation of the ToR. The word "until" reflects the CM "hierarchy" proposed by CRA and largely accepted by the MCE. This hierarchy is described in the MCE's rule change request on "Reform of Regional Boundaries"[27], as follows:

1. "A congestion management regime is applied where material congestion emerges…
2. Where network congestion is commercially material…and enduring…and has not been addressed by investment, it may be appropriate in this instance that the AEMC invoke its LRPP[28]
3. Where the AEMC has applied its LRPP and no investment proposal…has been committed for completion…a regional boundary review may follow."

Under this policy, any material congestion which endures over the medium term may in the future be addressed by investment or region change, which would supersede the (intra-regional) CM mechanism. In this sense – and in this sense only – the CM regime manages congestion until it is addressed by region change.

However, there will be many occurrences of congestion which are insufficiently material or enduring to be addressed by augmentation or region change. The AEMC appears to believe that these should *not* be addressed by a CM mechanism, because there is no prospect of them, in the future, being addressed by investment or region change.

In our view, this interpretation is inconsistent with the NEM objective and with MCE policy:

- the NEM objective implies that all material congestion should be managed, where "materiality" is defined in relation to the cost and effectiveness of the CM mechanism;

[27] Rule Change Request from MCE entitled "Reform of Regional Boundaries", October 2005, page 5
[28] Last Resort Planning Power]

- the CM hierarchy described by the MCE is straightforward: “a CM regime is applied where material congestion emerges”. Apart from materiality, there is no qualification on which congestion should be managed; and
- the CMR ToR simply refers to managing “material” congestion, not to “specific”, “identified” or “enduring” congestion; as noted above, where the MCE has a specific policy, it is usually explicit about this policy.

The interpretation also creates practical difficulties, since:

- it is impossible to know at the time that congestion emerges whether it is going to be sufficiently material and enduring so that it will, in the future, be addressed by investment or region change; or, alternatively, whether it will simply “go away” or continue chronically or episodically at a level which is insufficiently material to justify investment or region change but is sufficiently material to warrant a CM mechanism; and
- it is not possible to manage congestion retrospectively, so it is not practical to wait to see if congestion will be addressed by investment or region change before applying a CM mechanism to it.

Finally, we would dispute the AEMC position that “the Commission was not asked to develop a regime for long term market-wide application”. We think that the AEMC may be confusing a CM *regime* with a CM *mechanism*. It was surely the intention of the MCE that the CM regime *would* be NEM-wide and long-term. The ToR did not specify, for instance, that the regime should only apply to one part of the NEM (in Snowy, say) or that it should have a sunset date. As noted above, the need for a new intra-regional CM regime arises from the change in region policy. To the extent that the latter is NEM-wide and long-term, the former also needs to be NEM-wide and long-term.

However, whilst the CM *regime* should be NEM-wide and long-term, this does not mean that the individual CM *mechanisms* implemented pursuant to that regime need be long-term or NEM-wide, since they only need apply when and where material congestion arises. The application of these mechanisms could either be:

- *automatic*: immediately applied whenever and wherever congestion arises: this is the essence of a *complete* CM regime; or
- *manual*: requiring a regulator to decide where and when to apply new CM mechanisms as new congestion emerges: this is the essence of a *partial* CM regime.

An analogy with region boundary policy may help clarify this distinction further. The new region change regime (once it has been implemented through the reform of regions rule change) will be both long-term and NEM-wide. However, region boundaries themselves (ie the CM *mechanisms*) are neither: there are currently no region boundaries within Queensland or Tasmania (for example) and any current region boundaries are subject to change over the long-term.

Issues Paper

The AEMC published an "issues paper" on the CMR in March 2006. In that paper, the AEMC articulated its understanding of the MCE's requirement that a "staged approach" is used for congestion management (P37), which is essentially as we have interpreted it in the previous section.

In that paper, the AEMC also presented a number of alternative options for CM solutions. One option was described as follows:

> "…as an alternative to full nodal pricing, it could be possible to introduce and an arrangement where generators are settled according to nodal prices, while customers continue to pay for electricity based on zonal prices." (P47)

This is an example of a "complete" CM solution, of the kind which the AEMC is now saying is out of scope. There is no suggestion in the issues paper that the AEMC then considered this option – or any other complete option – to be contrary to the terms of reference. Thus, the AEMC must have come to this view since the issues paper was published.

Why has the AEMC's thinking changed? We would have expected the AEMC to consider carefully the meaning and scope of the ToR prior to drafting the issues paper and to have consulted the MCE where there was any ambiguity. As far as we are aware, no submissions on the issues paper raised this scoping issue and there has been no further advice from the MCE clarifying or amending the ToR.

Congestion Materiality under complete and partial solutions

We noted above that congestion "materiality" must be defined in terms of the cost of introducing CM mechanisms. Partial and complete CM solutions have quite different cost characteristics, given that:

- in a complete approach, all future congestion is automatically managed, with no further regulatory intervention;
- in a partial approach, only specified congestion is managed initially. Should material congestion occur in the future in areas not managed, regulatory intervention – pursuant to the CM regime – is required to introduce any new mechanisms to manage this congestion.

Therefore, the cost characteristics of the two approaches are:

- in a complete approach, the majority of costs are incurred at the initial implementation. There are no costs associated with extending the CM mechanisms to cover new, emerging areas of congestion since these are covered automatically;
- in a partial approach, some costs are incurred on initial implementation and further costs are incurred each time the coverage of the CM mechanisms are extended or revised.

So, for a partial approach, congestion not covered by existing mechanisms would only be considered "material" once its expected future impact exceeded the incremental cost

of developing, implementing and operating an additional CM mechanism. Thus, for CM mechanisms to be applied, there would need to be a new *specific*, *identified* and *material* area of congestion, with the materiality threshold based on the incremental cost of new CM mechanisms. Therefore, in relation to a partial approach, the AEMC is correct to say that it would only cover specified, identified and material congestion.

However, for a full approach, the choice is all or nothing. The approach should be implemented if the aggregate level and impact of *all* future congestion – existing, anticipated and unexpected – across the NEM exceeds the (net present value of) implementation and operating costs of the full CM solution. The fact that the solution covers constraints which, in practice, may never become congested is irrelevant, since there is zero incremental cost to the scheme in covering these constraints and so the materiality threshold required to include these constraints within the scheme is also zero.

In summary, the concept articulated by the AEMC that a CM mechanism should only be applied to identified, specified instances of material congestion is appropriate to partial CM solutions where there is a significant incremental cost associated with each extra area of congestion which is covered by the scheme. It is not appropriate to a complete CM mechanism, where there is essentially no incremental cost to managing new areas of congestion.

Effect of Congestion Characteristics on the Choice of Solution

We noted earlier that the occurrence of congestion is likely to be both diverse and uncertain. Such characteristics may militate against a partial solution, since:

- if congestion is diverse, a large number of mechanisms will need to be used to manage a substantial proportion of overall congestion; or, conversely, if only a small number of schemes are feasible, only a small proportion of congestion will be managed;
- if congestion is unpredictable, mechanisms may be short-lived or in the wrong place. For example, material congestion may occur in one area in a particular year, prompting the application of a new mechanism there. However, in the following year, the congestion may subside in that area and arise in a new area not covered by an existing mechanism. Thus, again, it may be difficult to manage a substantial proportion of overall congestion.

On the other hand, a partial approach may be more effective if congestion is concentrated and predictable. Therefore, an important area of study for the CMR is to measure the diversity and unpredictability of congestion, since this will determine the relative merits of partial and complete CM mechanisms.

Practicability of CSP/CSC Approaches

On pages 53-54 of the directions paper, the AEMC casts doubt on the practicability of a CSP/CSC approach covering a large number of areas of congestion:

> "The Commission also notes that CSP/CSC arrangements were originally envisaged as being workable for only a relatively small number of locations (up to five) across the NEM at any one time."

This view is based on a statement by CRA in their final report to the MCE. We do not know the context of this statement, since this report has not been published. We have only seen the excerpt reproduced in footnote 65 in the directions paper:

> "The [CSP/CSC] regime is most suited to manage a small number of local conditions under the broader regulatory framework; it would become overly complex if used universally across the NEM. Our expectation based on the history of the NEM and analysis of the potential level of congestion under the investment framework, is that the regime might be applied to a relatively small number of key points of congestion, say five, at any one time across the NEM."

We agree that a partial CSP/CSC scheme will become increasingly complex as more CSP/CSC schemes are introduced. However, we do not believe that this shortcoming would apply to a full CSP/CSC scheme since, as noted, it does not become any more complex in the face of new areas of congestion emerging.

Therefore, the relative practicalities of partial or full CSP/CSC schemes will depend upon the diversity and materiality of congestion across the NEM.

Summary

In summary, we think the AEMC is mistaken to interpret the CMR ToR as implying that complete CM mechanisms should not be considered in the CMR: that is mechanisms which apply to all congestion, current and future, actual and potential, irrespective of the efficiency impact of individual areas of congestion. This interpretation appears to be inconsistent with the NEM objective and with related statements of MCE policy.

Complete and partial CM solutions have different cost and effectiveness characteristics. The costs of complete solutions are primarily incurred upfront, whilst the cost of partial solutions increase as the number of different CM mechanisms introduced increase. Partial solutions will be most effective where congestion is concentrated and predictable, whereas complete solutions will be more effective where congestion is diverse and uncertain.

Given the existing lack of clarity both on the relative costs of these two approaches and on the characteristics of future congestion, it is not clear at this stage which approach is more appropriate and effective. We therefore think it is premature to exclude complete solutions and may lead to a loss of NEM efficiency if it subsequently transpires that complete approaches are in fact the most appropriate. In particular, we urge the AEMC to consider and evaluate both the partial and full CSP/CSC approaches in the remainder of the CMR.

3.4. Grandfathering

Overview

A critical component of the full CSP/CSC proposal put forward by the LATIN group was that existing generators would be allocated CSCs so as to "grandfather" them against the impact of the new CSPs. The objective of this grandfathering was that if generators continued to be dispatched at historical levels they would receive the RRP (ie be unaffected by the CSPs) for this level of output. However, any output above or below historical levels would be priced by the new CSPs. Thus, CSPs would apply at the

margin and the inefficiencies created by inconsistencies between dispatch and marginal pricing would be removed.

However, the AEMC rejected grandfathering – at least in this context - remarking on page 72 of the directions paper that:

> "[Grandfathering] would provide a benefit to incumbent generators without offering any efficiency improvements over auctioning"

As incumbents with substantial sunk assets committed to the NEM, the impact of any regulatory changes to the NEM is an important concern to us and we are disappointed to see our suggestion summarily rejected. In this section we argue that:

- from a policy viewpoint, whether or not grandfathering provides benefit to incumbent generators is irrelevant;
- regulatory good practice dictates that the impact of new regulations on existing participants should be minimised, to the extent that this is possible without compromising the objectives of the new regulations; and
- contrary to the AEMC position, the grandfathering approach proposed by the LATIN group *does* offer efficiency benefits compared to the alternative of auctioning CSCs.

These points are covered below.

Policy Considerations

The AEMC notes, on page 10 of the directions paper, that:

> "different arrangements for managing risk arising from congestion may have distributional impacts. The Commission considers that the NEM Objective is primarily concerned with economic efficiency and good regulatory practice. These qualities will help ensure that the market arrangements will benefit consumers in the long term. Rather than seeing distributional outcomes as a distinct limb or component of the NEM Objective, the Commission has taken the view that distributional outcomes have relevance *only in so far as they may negatively influence the stability and integrity of the market arrangements*. Basing fundamental decisions on the operation of the market primarily on distributional criteria rather than efficiency and good regulatory practice is likely to be counterproductive to the interests of consumers in the long term." (our emphasis)

We agree with this position. We believe that making changes to the NEM rules, such as introducing CSPs, without providing reasonable protection to incumbents against the adverse commercial consequences of doing this, would indeed "negatively influence the stability and integrity of the market arrangements." A regulatory regime with a propensity to introduce new regulations having substantial adverse consequences for essentially blameless participants would be widely perceived to be rather unstable.

These considerations are generic and not directly related to CSP/CSC mechanisms; appropriate grandfathering is good regulatory practice whatever the context.

On page 48, the AEMC notes:

> "constrained on payments could also introduce an overall wealth transfer to generators in the NEM. The Commission considers that the materiality of such a transfer would need to be understood as a prerequisite to any implementation of such an arrangement."

So, in some circumstances at least, the AEMC does recognise that distributional outcomes have relevance to the desirability of a potential CM solution.

Grandfathering does improve efficiency

We believe that a grandfathering approach would provide efficiency benefits in the following ways:

- it would reduce the perceived level of regulatory risk in the NEM and so encourage new entry and investment;
- it would lessen the need to design and implement complex auctioning arrangements for CSCs;
- it would ensure allocation of CSCs to constrained-on generators and so relieve the problem of revenue insufficiency; and
- it could mitigate market power concerns

These benefits are discussed below.

Firstly, the reduction in regulatory risk relates not to CM solutions specifically, but more generally to the approach and attitude of the AEMC to mitigating regulatory impacts on incumbents. A policy – express or implied – of endeavouring to shelter blameless incumbents from the worst of the impact would certainly reduce the perceived level of regulatory risk in the NEM.

Secondly, a grandfathering approach would be administrative rather than price-based and so would not require an auction infrastructure[29]. Whilst efficiency may be further improved by allowing some secondary trading of CSCs – to ensure that they go to those who value them most – this could potentially be done "informally" between NEM participants without having to develop any central market infrastructure (just as secondary trading of other financial NEM instruments currently takes place).

Auctioning of all CSCs would also raise complex policy issues. Should the auctions have a reserve price? Who should be allowed to participate? Should there be any restrictions on auction purchases[30]? How often should auctions take place and what duration of CSCs should be offered? How should the non-firmness of the transmission network be reflected in the design of the auction instruments? We note that the market is still grappling with some of these issues in relation to the SRA auction. Of course, policy issues also arise with grandfathering.

[29] It may be necessary to design auction arrangements in relation to the capacity provided by transmission augmentation, although there might also be other, simpler forms of issuance for these CSCs.

[30] for example, as Snowy Hydro is currently restricted in the IRSR auctions

Thirdly, auctioning CSCs with negative value may be problematic. The AEMC notes, on pages 71-72 of the directions paper, that:

> "not all CSCs would have a positive value, so not all CSCs could be sold in this manner. This suggests that there may be a funding shortfall that would need to be somehow recovered."

We agree that this problem would arise with auctioning and note how negative cashflows associated with auctioned instruments have created – and continue to create – problems in relation to IRSRs. This problem would not arise under grandfathering, where we envisage that grandfathered allocations would be mandated under NEM Rules, so incumbent generators would not have the right to reject negatively-valued CSC allocations.

Finally, grandfathered CSC allocations would also mitigate concerns that the introduction of CSPs could provide the opportunity for generators to exercise transient market power. This is because the grandfathering would ensure that a generator continued to receive the RRP for the majority of its output and the opportunity and motivation to exert market power to manipulate CSPs would only apply to the remainder. Auctioning does not provide mitigation, since a generator can simply decide not to bid for a CSC if this were against its interests or, alternatively, may be able to purchase CSCs at auction which actually *increased* its market power.

Alternative allocation methodologies

The AEMC notes, on page 72 of the directions paper, that "any allocation mechanism for CSCs is likely to be controversial, regardless of how straightforward the methodology appears to be in theory". We agree, and note further that the controversy is likely to stem primarily from the consequential distributional impacts rather than the efficiency impacts. In this respect, a grandfathering methodology is likely to be the least controversial of all allocation approaches because it minimises the extent to which there are "winners" and "losers".

Of course, there may be some controversy about how the details of how the grandfathering principles are applied. We believe this should be an area of focus for the remainder of the CMR.

Summary

We think that the AEMC is wrong to dismiss grandfathering. Without grandfathering, new CM mechanisms which contribute to NEM efficiency could, at the same time, have adverse commercial impacts on blameless incumbents, negatively influencing the stability and integrity of the NEM arrangements.

Furthermore, grandfathering arrangements can themselves contribute to NEM efficiency by reducing perceived regulatory risk, diminishing the reliance on expensive auction infrastructure, mitigating problems of revenue sufficiency and restricting generator market power.

Finally, a grandfathering approach is likely to be the least contentious of all possible CSC allocation methodologies, since it minimises the extent of winners and losers.

3.5. Incentives on New Entrant Generators

Overview

In section 2.2, we noted that changes to dynamic efficiency were typically much higher – up to an order of magnitude – than changes to static efficiency. This suggests that the AEMC should be considering CM mechanisms which beneficially impact dynamic efficiency. However, the directions paper instead seems to focus on static efficiency.

Indeed, the only proposal that we can see that is intended specifically to promote dynamic efficiency is the provision of additional congestion information. Otherwise the emphasis seems to be on ensuring that new CM mechanisms do not *worsen* dynamic efficiency. Proposals which are specifically targeted to improving dynamic efficiency – for example the Delta proposal – are rejected.

We think it is a mistake to focus on static efficiency. Recall that the need for the CMR has arisen from the change in MCE regions policy. In the original NEM design, regional pricing was intended not just to affect static efficiency – through congestion management and pricing – but also to affect dynamic efficiency through incentives on new generators to locate in generation-short regions where prices would be higher. If these incentives are not to be provided entirely by regional pricing, new incentive mechanisms are needed.

Incentives under a Grandfathering Approach

The AEMC notes, on page 82 of the directions paper, that:

> "Another approach, suggested by the LATIN Group, is for incumbent generators to receive CSCs according to a methodology based on historical dispatch output levels, (under peak demand and network system normal conditions). As these generators are already located where they are, this approach would not encourage (new) generators to locate in constrained parts of the grid"

However, the LATIN proposal is not only that incumbents are allocated CSCs, but also that new entrants are *not* allocated CSCs where these are not able to be supported by the existing transmission network. Thus, new generators are discouraged from locating in generation-rich areas where insufficient network capacity means that they will simply create or exacerbate congestion.

As our focus has been on constrained-off generation, our earlier submission did not directly address the issue of encouraging generators to locate in generation-short areas. However, appropriate incentives in this respect would be introduced if new generators were not issued CSCs, since these generators would then receive the relevant CSP and so be paid at a price higher than the local RRP.

Entry Barriers

The AEMC notes, on page 72 of the directions paper, that:

> "The Commission would be particularly concerned to ensure that whatever means of allocation is applied does not lead to the creation of barriers to entry to new generation investment."

We agree with this view as it is consistent with promoting dynamic efficiency. However, if the AEMC intends to imply (as it has previously asserted) that allocation of CSCs to incumbents creates a barrier to new entry, then we would disagree. Under our proposal, any cost to a new entrant of acquiring CSCs would reflect the cost either of developing additional transmission capacity or of creating or exacerbating congestion. Such costs are not "barriers" but efficient incentives for potential generators to properly consider these costs when deciding on a location.

Indeed, as we have argued elsewhere[31], the most significant barrier to new entrants is the uncertainty over financial access to the RRN, particularly given that – under current rules – a future entrant can create congestion where none currently exists and there are no price signals to discourage a future entrant from doing this.

We believe that such an entry barrier may have efficiency implications that are larger than the static efficiency concerns that are the focus of the directions paper. For this reason, the CMR should consider how CM mechanisms can be applied to mitigating these concerns.

Summary

We believe that the major impact of congestion on NEM efficiency is likely to be through the incentives – or disincentives – it creates for potential generation entrants in relation to where, when and whether to invest. However, the focus of the directions paper appears to be on static efficiency (especially dispatch efficiency) which, though important, is subsidiary to dynamic efficiency concerns.

[31] "Barriers to New Generation Entry: Why Transmissions rights are the solution, not the problem", submission to the AEMC, November 2006

4. Options for Change

4.1. Overview

In general, we have fewer concerns about what options are proposed to be considered than over the options which are being excluded. The options proposed each have their strengths and weaknesses and we expect these to be identified and analysed in the course of the review.

The directions paper identifies a number of conceptual issues arising with each option. However, what has not been done to date is to consider the costs of implementing and operating these options. As noted previously, the materiality of congestion must be gauged by comparison with these costs, as well as to the effectiveness of the solutions in managing congestion risks. Therefore, there is also a need to examine the cost of these options.

In general, we would rather the AEMC focus on fundamental changes than incremental changes. This is not to say that fundamental change is necessary or justified, simply that an MCE-directed review provides a rare opportunity to consider fundamental changes and the wide-ranging impacts that they can have on many aspects of market design and behaviour. Incremental changes, on the other hand, can and generally should be considered through the rule change process, since their impacts will generally be simpler and narrower.

Having said that, we acknowledge that the merits of fundamental change must be gauged against the merit of incremental alternatives and so are comfortable that both types of change are being considered.

4.2. Fundamental Changes

Overview

We have already considered issues associated with CSP, CSC and deep connection charges. The remaining options for fundamental change discussed in the directions paper are:

- limited forms of nodal pricing.
- changes to IRSRs,
- constraint-based residues,
- intervention rules,
- transmission investment and
- transmission operation.

These are briefly commented on below

Limited forms of nodal pricing

We agree that full nodal pricing should not be considered further. However, this is not because of concerns that “complete” solutions are out of scope; it is simply because the MCE has explicitly excluded it in earlier policy statements.

Generator nodal pricing, however, *is* within the scope. Having said that, we do not support it, preferring a full CSP/CSC mechanism. Whilst both options provide similar price signals to generation at the margin, the full CSP/CSC option also provides a mechanism for grandfathering incumbent generators against the commercial impacts of moving to nodal prices.

We consider the reference to "local generation pricing" may be something of a misnomer. Where a constraint that is priced lies on a loop, all generators on that loop will see a different nodal price. Thus, the extent of the nodal pricing will not necessarily be localised.

We note that, under "local" generator nodal pricing, it is proposed that the demand-side may pay a volume-weighted average of the nodal prices. This might significantly complicated the setting of this price and the processes need to hedge against it. We would prefer to see the demand-side price remain as the RRP. However, we recognise that this could, theoretically, lead to a settlement shortfall and the materiality of this risk would need to be assessed.

Changes to IRSRs

We agree that there are potential difficulties with the definition or firmness of IRSRs in the presence of loop flows and intra-regional constraints. We would suggest addressing the three circumstances listed in the directions paper (p70) in different ways:

- where mispricing of intra-regional constraints can cause counterprice flows, this is best addressed directly by fixing the mispricing (ie by pricing the intra-regional congestion) rather than changing the IRSRs;
- where physical loops occur across region boundaries (eg Snowy-Vic), counterprice flows may be a consequence of correct pricing at the RRN. The problem arises in the settlement process. The solution, therefore, lies in correcting the settlement process so that counterprice flows (and negative IRSRs) can be tolerated, rather than by changing the IRSR definition. The IRSR serves as an inter-regional hedge: if the inter-regional price difference is negative, the IRSR cashflows should be negative too;
- where loops must be introduced into the regional model, this will cause some profound changes in many areas of dispatch, pricing and settlements. However, at present, there is no prospect of such loops. Indeed, it is conceivable that the new region change process might prohibit such loops. Therefore, it appears premature to seek solutions to hypothetical circumstances which might never occur in practice.

Constraint-based Residues

We find Darryl Biggar's proposals to be an interesting thought experiment, which can clarify and make rigorous the definitions of CSCs, nodal prices, FTRs etc. However, given the many of thousands of constraints in the NEMMCO constraint library – which is being updated and changed constantly – we do not think it would be a practical proposition for CBRs to be allocated and traded individually, despite the theoretical benefits this might provide in terms of improving hedging of congestion.

We would also point out that, although portfolios of CBRs can be created that provide firm intra- or inter-regional hedges (more commonly referred to as firm FTRs), the overall availability of these hedges is limited not by the design of the trading arrangements but by the physical capacity of the network, particularly under outage conditions.

Our concerns in relation to a "partial" CBR approach are similar to those relating to the partial CSP/CSC: that is the ongoing cost and regulatory risk and the likelihood that a large proportion of congestion will not be captured by such arrangements.

Intervention Rules

The MCE policy (as articulated in the May 2005 Transmission Statement) made it clear that NEMMCO intervention should only be considered as an interim solution to congestion management. Therefore, proposing it as a fundamental solution would seem to be contrary to MCE policy and out of scope. As noted above, there are alternative approaches to addressing the problems of negative IRSR which do not involve distortions to the dispatch process.

In particular, the suggestion that, in the context of hybrid constraints, priority might be given to interconnector flows, runs counter to MCE policy that "fully optimised" constraint formulations should be used throughout the NEM. Whilst we are sympathetic to the concerns arising under optimised-constraint formulation in the current NEM pricing arrangements, this should be addressed by fixing the pricing problems, not intervening in dispatch.

Transmission Investment

The directions paper notes that the regulatory framework governing transmission investment has "undergone extensive review in the recent past" and the new regime should be "given time to operate" before further reform.

However, the Chapter 6 review did not directly consider the relationship of this regulatory framework to congestion management. Indeed, the AEMC noted in that review that some aspects of the framework may be further changed in the light of the CMR.

Furthermore, the CMR ToR explicitly require that the review should take account of and articulate the relationship between the constraint management regime and (*inter alia*) the regulatory test and TNSP incentive arrangements.

For these reasons, we think that the framework for transmission investment – and its relationship to the emergence and management of congestion – should be considered further within the CMR.

Transmission Operation

Again, we do not see why this is out of scope of the CMR, although we accept that it is both very complex and is less pertinent to congestion than the other issues discussed. We think that this area should also be considered further in the CMR.

4.3. Incremental Changes

Overview

As noted earlier, we do not think that incremental change should be the focus of the CMR. Certainly, scarce resources should not be diverted from the more complex and wide-ranging issues arising under fundamental change.

The comments in the section should be read in the context that incremental changes are being proposed. Where these issues are the subject of more fundamental change our position may be different.

Dispatch Rules

We would support the proposal that the requirement for NEMMCO to formulate constraints as "fully optimised" should be moved to Chapter 3 of the Rules.

Region Change

We agree that the criteria and processes for region change are outside the scope of the CMR. However, we would note that the ultimate design of these processes will impact on the appropriateness and effectiveness of the various options considered in the CMR. In particular, we would envisage a significant probability – if not a likelihood – that no further region change will occur once issues around the Snowy region have been settled. The AEMC should factor that possibility into their considerations.

Pricing for Constrained-on Generation

We agree that current arrangements for provisions of payments to constrained-on generation may lead to NEM inefficiencies. This is a specific instance of the general problem of regional pricing in the presence of intra-regional constraints: that the price paid to a generator may not reflect its value to the market.

Generation may be constrained on in two different circumstances:

- where a generator is located in a "load pocket": a load centre remote from the RRN which due to inadequate transmission cannot be supplied entirely by remote generation: for example Far North Queensland; and
- where a generator is located on or close to an interconnector and may act as a "gatekeeper" limiting or enhancing flows on the interconnector: for example Tumut (pre-Snowy Trial) when Murray-Tumut is constrained northwards

In a load pocket, a generator's output may be required to maintain reliability/security and even to prevent load shedding, so its value to the market may be as high as VoLL. Therefore, whilst it is vital that the generator is incentivised to produce, it may have substantial transient market power if allowed to set its own price for doing so. A gatekeeper's output, on the other hand, can typically be substituted by generation in the importing region, so its value to the market and its market power are both lower. These fundamental differences suggest that different solutions may be appropriate.

Indeed, in the "load pocket" context, there are two existing mechanisms to provide payments to constrained-on generators over and above the RRP: network support

agreements with the local TNSP and the directions compensation arrangements. We acknowledge that these processes are imperfect: the former lacking transparency and providing unclear incentives for TNSPs to behave efficiently; the latter giving rise to some *de jure* (if not *de facto*[32]) uncertainty to directed generators, and being somewhat clunky in that a generator must first declare itself unavailable in order to receive compensation. There may be some incremental changes that would make these processes more effective.

However, a change to these arrangements to allow a load-pocket generator to be paid its offer price would simply hand windfall gains to such generators, without obviously improving efficiency. Indeed, it might actually worsen efficiency if it means that TNSPs can no longer justify augmenting the network or entering into network support agreements to maintain reliability in the load pocket.

In the gatekeeper context – at least in the typical situation where the constrained-on generator's output does not affect reliability – these existing mechanisms do not apply. We believe here that the inefficiencies are best addressed through a CSP/CSC arrangement which applies generally to both constrained-on and constrained-off generators. Thus, for example, the Snowy Trial has been effective at encouraging Tumut to produce more efficiently. A CSP/CSC arrangement is preferred to a narrower constrained-on payments approach as:

- it corrects pricing inefficiencies for both constrained-on and constrained-off generation;
- CSCs can be applied to limit the degree of commercial disruption to generators affected by the new mechanism; and
- the mechanism is essentially self-funding, so there is no funding shortfall passed through to retailers or TNSPs.

On the other hand, recognising the inefficiencies created by the lack of compensation for constrained-on gatekeepers, introducing constrained-on payments as described in the directions paper would be a necessary second-best alternative if it were decided not to introduce an appropriate CSP/CSC mechanism.

IRSR enhancements

We agree that extending the duration of the IRSR auction instruments might, to some extent, provide greater medium-term certainty for inter-regional trading. However, this is limited by the medium-term uncertainty of the IRSR cashflows themselves, particularly in the face of potential region change or introduction of new CSP/CSCs or other CM mechanisms[33] which draw upon the IRSR revenue.

Thus, it is of higher priority to address those other issues first. Region change should become clearer once a determination is made on the MCE's "reform of regional boundaries" rule change proposal and on the various Snowy region rule change

[32] The methodology for determining a "fair payment price" is fairly well established, if not yet codified

[33] For example, possible extension of the "southern generators rule" for managing negative residues.

proposals. The CSP/CSC issue should be clarified by the CMR. Once these pieces of the jigsaw are in place, it would then make sense to address the specifics of the IRSR auction design, perhaps through a further rule change proposal from interested stakeholders.

Recovery of negative residues

We agree that this issue should be addressed by the CMR. As noted in previous generator submissions on this rule change[34], we do not support the process through which negative residues are first used to offset positive residues within the same billing week. We therefore believe that the existing Rule should be extended by removing the sunset date, and that the Rule should be expanded to apply the same funding mechanism consistently across all timeframes, discontinuing NEMMCO's practice of netting negative from positive residues within a billing week.

Information Rules for Managing Congestion

We generally support the publication of additional information. We are not clear exactly what the AEMC means by the "nodal prices" that it proposes to publish. Presumably, these would be the RRP, adjusted by the CSPs arising from all binding intra-regional constraints and also adjusted by the intra-regional static loss factors. If this is the case, these are the same prices that generators would see at the margin under a full CSP/CSC scheme.

We would also caution that the significance of the nodal prices is diluted by the fact that generators are not actually exposed to the price. Indeed, one would expect regularly to see -$1,000 nodal prices as a result of constrained-off generators seeking to maximise their dispatch levels. Such prices would not be seen if they were effective Therefore, whilst publishing nodal prices should improve transparency overall, there should be appropriate caveats to ensure that they are not misinterpreted, particularly by potential entrants who may be unfamiliar with the idiosyncrasies of NEM pricing.

Transmission Investment and Operation Rules

We consider that providing the appropriate incentives to TNSPs to minimise congestion is likely to significantly reduce the cost and impact of that congestion. For that reason, we support the AER-initiatives to develop market-based incentives. However, given that this work is underway, we are comfortable that the AEMC does not seek to duplicate it in the CMR.

[34] Submission from the National Generators Forum dated 1st March 2006 on the Draft Rule Determination: National Electricity Amendment (Recovery of Negative Inter-regional Settlements Residue) Rule 2006, AEMC.

Information Rules for Reducing Congestion

Again, we support the provision of additional information. However, this does not address the fundamental lack of access certainty that a new generator faces. Thus:

- information indicating the amount of additional generation injection that a network can accept, will only indicate whether the new entrant on its own will create congestion. It provides no guarantees that future entrants will not locate nearby and create their own congestion
- information on the cost of network augmentation will allow a new entrant generator to factor in the cost of any funded augmentation, but it does not provide any rights to that generator to use that augmentation to guarantee access to the RRN.

Therefore, the provision of such information may have limited effectiveness unless accompanied by the more substantial changes needed to provide greater access certainty.

5. Conclusions

We conclude the following:

1. We agree with the AEMC that the measurement and analysis of the materiality of congestion is an essential part of the CMR. We would not wish to see changes to NEM arrangements proposed whose costs outweigh their benefits.
2. However, it is important to remember that "materiality" must be predicated on the cost and effectiveness of potential CM solutions. Thus, low cost solutions might be introduced even if the impact of congestion is relatively low, whereas higher cost solutions would only be justified if the impact of congestion is high. This may seem obvious, but the directions paper makes statements about the materiality of congestion despite no estimation of the potential cost of mechanisms to manage it. It is really not possible to be definitive about materiality without an understanding of the cost and effectiveness of all potential CM solutions.
3. Conceptually, we would expect that the extent of intra-regional congestion will trend higher as the NEM transitions from state-based grids to a "fully national" grid. Thus, historical analysis of congestion may have limited relevance to the measurement of future congestion impacts.
4. However, such historical analysis does suggest that intra-regional congestion is unpredictable and diverse and, conceptually, we would expect these characteristics to continue into the future. Such characteristics may militate against the effectiveness of "partial" CM solutions which rely on specific instances of congestion to be identified before applying bespoke mechanisms to manage them.
5. Despite this, the AEMC is proposing to exclude from the scope of the CMR "complete" CM solutions which automatically manage future instances of congestion, wherever and whenever it occurs. We accept that the relative costs and benefits of "partial" compared to "complete" solutions are unclear, but believe that both should be considered further in the CMR.
6. We also disagree with the AEMC's dismissal of "grandfathering" arrangements to minimise the commercial impact of any new CM mechanisms on blameless NEM participants. As a policy principle, we think that grandfathering enhances the perceived stability and integrity of NEM regulation and should be used to the extent that it does not interfere with or compromise other regulatory objectives. In any case, grandfathering may in some instances lead to a lower-cost or more effective solution.

7. We feel that the AEMC has focussed too much on static efficiency impacts, whereas the effect of congestion on dynamic efficiency is likely to be more significant. As a result, the AEMC has ruled out options which primarily influence new investment, although these may bring greater benefits to the NEM over the longer term.
8. We are generally content for the various incremental and fundamental changes proposed in the directions paper to be considered further in the CMR so that their strengths and weaknesses can be better understood. In general, we think that the focus should be on fundamental change: not because it is necessarily appropriate at this time, but because a review of this kind represents a rare opportunity to consider such change. Incremental changes, on the other hand, can be considered through the normal rule change process.
9. In this submission, we have focussed our comments on the proposed scope of and approach to the CMR rather than the particular merits of potential solutions discussed in the directions paper, since at this early stage the costs and benefits of these options has not yet been fully explored. We look forward to the AEMC's draft report when these aspects will be covered in more detail.