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Dear Sir or Madam

Regional Structure Review Consultation Paper

AGL supports the main recommendations of the Charles River Associates (CRA) consultation draft titled "NEM – Transmission Region Boundary Structure" dated September 2004. In particular AGL supports:

- NEMMCO defining all constraints in a common format and direction, using an "Option 4" configuration
- changing region boundaries only when there is a demonstrable net benefit
- the conclusion that there is currently no net benefit to an increased number of regions in the NEM
- increased lead time for region boundary changes and a defined period of region boundary stability to provide certainty for financial markets
- use of common economic assessment criteria for transmission augmentation and regional boundary changes
- further investigation of constraint support contracts and constraint support payments (CSC/CSP).

AGL is, however, concerned that:

- the criteria for region boundary changes do not explicitly identify financial market impacts and participant system impacts. While AGL notes that the increased lead-time should reduce financial market disruption, some costs will remain. We therefore consider that financial market disruption and increased costs of reducing basis risk for new and altered regions are major costs that must be included when assessing regional boundary changes
- imposing constraint support payments or contracts is not identified as being disruptive to the financial markets. Any mechanism that disturbs a region pricing calculation, or a price source for a participant, is likely to disturb current contracts to some degree
- limiting the flows on interconnectors when counter price flows occur is not justified on the grounds of efficient dispatch. AGL would prefer that efficient flows be allowed to occur and that the AEMC be required to determine a fairer method of managing the resulting residues than is currently the case.

Financial market impacts

CRA, in their presentations to interested parties at the recent consultation forums, stated that augmentation of networks, use of constraint support payments and alterations to regional boundaries

were alternatives to resolve the same issue. While this is undoubtedly true, AGL considers that removal of the constraint via augmentation should always occur before the other two alternatives, given the disruption caused by a change in pricing sources to the financial markets.

AGL considers it essential, therefore, that the assessment criteria for changes to regional boundaries or imposition of a CSC/CSP regime explicitly notes that financial market disruption is to be included in the costs to be considered so that any alternatives are correctly assessed.

Allocation of negative residues

NEMMCO currently limits interconnector flows if the level and duration counter-price flows results in excessive negative settlement residues¹. Counter priced flows may be an efficient outcome of the dispatch process given the requirement to co-optimize ancillary services and, in time, looped flows between regions. AGL therefore considers that, in the long term, the market should efficiently allocate the negative residues rather than limit dispatch. We would therefore prefer that NEMMCO and the AEMC be required to find a better allocation mechanism for negative residues rather than directing NEMMCO to reduce interconnector capacity artificially.

General comments

More generally, AGL maintains the view that all aspects of transmission need to be considered in conjunction with regional structure so that a consistent package is developed. This package must include:

- transmission operation, currently addressed via service standards
- representation of the network in the dispatch algorithm (NEMDE)
- transmission augmentation, in particular the regulatory test
- transmission pricing, in particular beneficiary pays for new investments
- customer and generator connection processes and charging
- congestion support contracts, or similar mechanisms
- regional boundary changes, as a last resort.

If all of these aspects are not considered together it is possible that an inefficient solution is imposed in one of these aspects of the package when an alternative solution in another aspect would resolve the issue. Similarly a change in one area can introduce problems in another.

AGL supports the conclusion by CRA that augmentation decisions and changes to the region structure should use the same economic criteria. We would, however, go further and say that all regulated or imposed changes in the network areas, including CSP/CSC, should have consistent criteria of this form.

AGL also considers that the MCE needs to apply a grading of criteria to ensure less disruptive options naturally precede more disruptive options. Network augmentation and a constraint support contract, for example, could both be used to manage intra-regional congestion but only the augmentation can remove persistent congestion without disrupting financial markets, and this should be reflected in the criteria. Similarly, congestion support contracts are only intended to manage material but not persistent intra-regional congestion and should therefore include some time based criteria to prevent them becoming, themselves, persistent.

The CRA report contains a good outline of how the CSP/CSC regime could work but it will still need to be further defined. Key aspects, such as the method for allocating rights and whether grandfathering of rights will occur are not discussed. AGL therefore supports immediate investigation of the concept so that its feasibility can be assessed. As part of the investigation, it may be worthwhile to trial the concept

¹ Flows from a higher priced region to a lower priced region. This results in negative residues that must be recovered from the market. To the extent possible, the negative residues are funded from the positive residues from the same period. Where this is not possible NEMMCO has to hold the debt and recover it from future periods.



within the Snowy region as advocated by Snowy Hydro Trading. The trial could allow an early assessment of the proposal and point to areas where it could be refined.

In the same vein, the known, material and persistent constraint between the Murray and Tumut transmission connection points could be used as an early test for the region structure change process, and the recommended criteria. The constraint is well accepted and can impact dispatch significantly. If appropriate assessment of that constraint, and others nearby, showed that a boundary change is warranted the CSP/CSC regime trial could be retained until the boundary change comes into effect.

In summary, AGL urges the MCE to quickly implement the CRA recommendations. As part of the further investigations into the CSC/CSP we suggest trialing the approach using the Snowy region.

More detailed comments are attached. If you have any questions regarding this submission, please contact Alex Cruickshank, Manager NEM Development, on (03) 9201 7694 or by e-mail to acruicks@agl.com.au.

Yours sincerely

Dr Robert Wiles
General Manager Regulation and Policy



Detailed Comments

Specific Response to the Consultation Paper

The consultation paper asked for comment in four areas related to the CRA recommendations:

- Constraint formulation and system security (recommendations 1, 2, 3, 9 & 10)
- Region boundary change process (recommendations 4, 5, 6 & 8)
- Congestion management (recommendations 5, 9 & 10)
- Other recommendations (recommendation 7)

The consultation paper also sought general comments on the CRA report.

This response will deal specifically with the first three points and then respond to the fourth point in a more general discussion.

Constraint formulation and System Security

AGL agrees with the Standing Committee of Officials (SCO) that all constraints should be developed in a consistent form and that the form should be the fully optimised form known colloquially as “option 4”. In the perfect case, this formulation will produce efficient dispatch.

This option can, however, produce inefficient counter price flows where intra-regional constraints exist and where perverse bidding incentives result. The report notes that network augmentation, a region boundary change or a constraint support contract could be used to resolve this situation, but that the option of an additional region or boundary change is often unavailable. AGL agrees.

Given the current situation with some intra-regional constraints the only option may be a congestion support contract as proposed by CRA. The original Code design had, however, incorporated some thinking in this regard. Generator connection (covered by clause 5.5 of the Code), for example, had foreseen that a generator may elect to connect on the wrong side of a constraint and had put the onus on TNSPs to determine a TUOS charge based on the planned output of the generator. The charge was to include the cost of either augmenting the network to ensure the output of the generator could be transported to the regional reference node or the cost of compensating parties constrained away from the relevant node. This clause has not been successfully applied². It was, however, designed to both provide relatively firm access for generators already connected and penalise new generators that increased a constraint. It also meant that generators would pay an increasing portion of TUOS costs over time³.

AGL therefore supports further investigation of the CSC/CSP approach. The investigation should, however, also include other approaches such as that embodied in clause 5.5 of the Code to see if a simpler regime can be applied.

Another weakness of the fully optimised constraint formulation is that it can allow counter priced flows in the NEM. Counter price flows occur in nodal markets due to loop flows and can also occur in the NEM due to the co-optimisation of ancillary services. These flows are efficient. Inefficient flows can also occur in the NEM due to intra-regional congestions. Counter price flows produced negative residues in the settlement process due to the NEM design in the same way that correct flows produce positive

² The “beneficiary pays” approach now included in the Code is, in part, a response to the lack of success in charging generators the full cost of their connection to the NEM. Implementation has, however been delayed by the NEMMF and now the MCE investigation into other transmission issues. There is a risk that TNSPs will not apply this rule appropriately and continue to overcharge customers for the cost of augmenting network between regions and between generators and regional reference nodes.

³ The CRA report correctly notes that generators are only charged shallow connection. The Code basis for this is not clear and it can be argued that TNSPs are undercharging generators and therefore overcharging customers. It was agreed at market start that generators should not pay for existing network assets. This was probably a mistake as it means that the true cost of energy is not reflected in the market, undervaluing energy efficiency initiatives, demand side response and distributed generation. This deficiency is addressed in part by the beneficiary pays regime and the pass through of network savings to distributed generators.



settlement residues. The CRA report recommends that NEMMCO continue to constrain interconnectors to limit counter price flows based on the level of negative residues. AGL does not agree.

NEMMCO currently constrains interconnectors that are subject to counter price flows when the total amount of negative residues become excessive. This is done, not because the negative residues are bad in themselves, but because NEMMCO has limited means to fund the residues. AGL believes that, rather than limiting flows to limit the residues the market should correctly fund the residues, relieving NEMMCO of the issue. This may be as simple as charging the negative residues to customers, via TNSPs, in parallel with the current disposition of positive residues or could be more complicated, such as charging generators where they increase congestion. Both options may be appropriate depending on whether the negative residues result from efficient or inefficient flows.

AGL therefore considers that the recommendation to direct NEMMCO to limit counter-price flows based on the level of negative residues should be replaced with a requirement on NEMMCO and the AEMC to examine appropriate mechanisms for allocating negative residues.

Region boundary change process

The CRA recommendations on the boundary change process are supported because they provide greater certainty to the process than is currently the case and require that a net economic benefit will accrue to the market if a change is to occur.

The new process is not, however, as much of a change as the report makes out. Before initiating a process to change regional boundaries the current Code (clause 3.5.3(a)) requires NEMMCO to determine that the “current definition of a region or location of a regional reference node materially fails to satisfy the criteria specified in clause 3.5.1 and is likely to continue to do so”. It does not require, as stated in the report, that NEMMCO review regions annually nor is it totally backward looking⁴.

The current Code does require NEMMCO and the Inter-regional Planning Committee (IRPC) to analyse congestion on an annual basis in preparation for the Statement of Opportunities. It also used to require the IRPC to determine augmentations to resolve the congestion but that was passed to the TNSPs. Interestingly the new Annual National Transmission Statement has brought the responsibility for reporting congestion, appropriately, back to NEMMCO.

The prime aim of determining congestion of the network (and general performance of the network) is to identify augmentation possibilities. AGL supports this aim and the ANTS process generally. We believed that the network should be thoroughly analysed to ensure that it is both being operated optimally and augmented appropriately before any thought is given to changing regions.

The process for relieving or managing constraints outlined in the report, and diagrammed on page 5 of the CRA report⁵ is supported, although support of the CSC/CSP option is dependant on a viable process being developed (see next section). In essence, non-material constraints are ignored, material constraints are managed or removed by augmentation and constraints that cannot be built out and that are material are managed in the long term by a region structure change.

AGL considers that boundary changes should, along with all changes in the NEM, occur only where there is a clear benefit to customers. The combination of economic and physical criteria reflects the difficult nature of the matters to be considered and this is well covered in the CRA report.

The criteria do not cover intra-regional losses. The current regional structure is an approximation of a fully nodal market that groups together those connection points that should not suffer material congestion between them and where fixed marginal loss factors for those points are a reasonable approximation of the losses incurred in getting energy to them. The existing criteria deal with the loss issues as much as the congestion problem but the new criteria ignore them. It is not clear whether the new criteria are to replace only the current congestion related criteria or whether losses are no longer relevant in considering regional boundary structure. This needs to be explained in the report.

⁴ In fact under the current regime, regional boundary changes do not have to occur at all.

⁵ It is not clear that the box “constraint remains the same” is actually different from “constraint becomes persistent”.



The CRA paper uses the longer lead-time of three years to apparently ignore financial market disruption costs. This has some merit over the existing 12 month lead-time and reflects the change from 12 month contracts that were prevalent at market start to the longer contracts now being negotiated. Three years is not, however, long enough to totally eliminate financial market disruption. AGL considers that financial market disruption should be included in the analysis.

AGL also believes that the additional costs to participants of changed or additional regional boundaries, including system changes and managing the increase risk must be included in the assessment of the net benefits. It is not clear in the report whether the additional costs to participants for additional regions is intended to be resolved through the extended lead time for changes and the NPV margin of \$1 million or if they are to be included in the assessment. If the margin is designed to cover the additional participant costs, it should be much greater. If not, then AGL considers that the report should clearly identify that all participant costs will be included in the analysis.

The criteria on region size (no region with less than 200MW of demand) need to be clarified so that it does not necessitate the removal of the Snowy region. Its intent is clear but, without the pumping load, the Snowy region is too small to fit the criteria⁶.

AGL also agrees that the same economic criteria should be used to assess regulated augmentation proposals and regional structure changes. AGL would suggest that this recommendation be taken further so that a consistent set of criteria is used across all constraint resolution approaches. This is further discussed later.

The new regional boundary criteria are, on balance, supported, subject to clarification on the losses and all costs being included in the analysis.

There is a clear, material and persistent constraint within the Snowy region. Currently Snowy Hydro Trading are proposing a trial of a CSC like arrangement to manage the constraint. While this is supported, the issue could be used as a first test of the proposed regional boundary process and criteria.

Congestion Management

AGL supports further investigation of the congestion management regime proposed by CRA⁷. As previously mentioned, the Code had envisaged some form of compensation/payment regime where connecting generators had the potential to create intra-regional congestion but that it had not been used. The CRA proposal could provide a more general and useful scheme.

AGL analysis of the earlier proposal, known as “gatekeeper” indicated that it had the potential to stabilise the value of the inter-regional settlement residue and thus be useful in reducing basis risk for inter-regional contracting. It suffered, however from complexity and AGL considered the cost of installing the scheme would outweigh the benefits.

The congestion support arrangements proposed by CRA also have the potential to be as disruptive to the financial markets as a regional structure change and may be complex to administer. The CSC/CSP scheme also needs to resolve the threshold issue of grandfathering of rights and allocation of rights. AGL therefore reserves its support until more analysis of this approach has occurred.

AGL also thinks that other, and possibly simpler, alternatives need to be considered before adopting the CSC/CSP approach. Alternatives for managing congestion include:

- flowgates and flowgate rights
- firm access rules, such as attempted by clause 5.5(f)
- use of dynamic line ratings

⁶ AGL considers that a separate region is not required for Northern Queensland. The supply problem there should be resolved by the local TNSP entering into network support contracts under clause 5.6.2 of the Code and NEMMCO charging the TNSP for network support when it is required to direct to maintain supply in the sub-region.

⁷ It must be clear that the scheme is designed to manage intra-regional congestion and not inter-regional congestion, which is already managed by a regional boundary. Often the issue is that an intra-regional constraint is either impacting or being included in an inter-regional constraint.



There is a danger that once a CSC/CSP regime is established it may prevent more permanent solutions to the problem being implemented. AGL therefore suggests that

- the criteria for determining that a CSC/CSP regime is to be used for a particular network constraint should be consistent with the criteria for network augmentation and regional structure changes
- the criteria should be such that an appropriate augmentation would proceed ahead of both the CSC/CSP regime and regional structure changes
- any use of a CSC/CSP regime be strictly time bounded.

AGL's general view of transmission reform

AGL believes that the current discussion on regional boundaries is being conducted in an isolated manner. Transmission reform should be seen as part of an integrated whole to prevent changes in one area adversely impacting another. The SCO sub-group clearly has a role in integrating the various transmission issues but the current approach is both fragmented and incomplete. A comprehensive review of the issues needs to consider:

- augmentation of the meshed network
- customer and generator connection processes
- network pricing
- network operation and service standards
- NEMDE representation of the network
- management of intra-regional congestion
- regional structure⁸

The CRA report into the regional boundary structure has, by necessity, dealt with some aspects of the NEMDE representation (constraint formulation) and management of intra-regional congestion (constraint support contracts and interconnector. The remainder of these aspects have either been passed to other parties or ignored in the current reform process.

If all of these aspects are not considered together it is possible that an inefficient solution is imposed in one of these aspects of the package when an alternative solution in another aspect would resolve the issue. For example:

- correctly charging generators⁹ that connect on the far side of a constraint for the network costs of the resulting network problems could reduce the incidence of intra-regional constraints reducing the need for mechanisms to manage intra-regional congestion
- changes to the configuration of the network in NEMDE could be an alternative to network augmentation if greater use can be made of the short-term capability of an element of the network.

AGL also believes that regulated investments or central management of network congestion should occur, and only occur, when the parties that see an increased cost will receive a net benefit for the investment or action. In this regard, AGL supports the conclusion by CRA that augmentation decisions and changes to the region structure should use the same criteria. We would, however, go further and say that all regulated or imposed changes in the network areas, including CSP/CSC, should have consistent criteria of this form.

⁸ It can be argued that this is a specific case of management of intra-regional constraints. Conceptually the NEM could be a single region but that would generate excessive intra-regional constraints. We therefore manage the intra-regional constraints by introducing regions to the point where the costs of the new regions outweigh the improvements in dispatch and loss representation. It has, however, generated enough debate to need to be listed for completeness.

⁹ Applying the existing clause 5.5 of the Code to generator connections so that the full cost of transferring their energy to the regional reference node is reflected in the connection cost.

