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Transmission Access Reform: May 2023 Consultation Paper

The Australian Energy Council ('AEC') welcomes the opportunity to make a submission to the Energy Security Board's ('ESB') consultation on its *Transmission Access Reform* ('Consultation Paper').

The Australian Energy Council is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. AEC members generate and sell energy to over 10 million homes and businesses and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 per cent emissions reduction target by 2035 and is committed to delivering the energy transition for the benefit of consumers.

Introductory Comments

Ahead of its June 2022 submission, the AEC agreed on four general principles that any transmission access reform should attempt to advance:

1. Market participants should have confidence in their network access levels for the life of the plant in which they have invested.
2. Participants should have reasonable predictability of the impacts of congestion to maximise their trading confidence, and to minimize negative impacts on contracting.
3. Investors should remain free to self-determine their location but should be incentivized to locate efficiently.
4. Access regimes should attempt to maximise dispatch efficiency.

The questions in the paper have been approached in this submission from the perspective of these principles.

The AEC recognises that Transmission Access has been a long-term challenging topic and that the merits of the hybrid model remain controversial. This submission responds to the Consultation Paper in the way it is laid out, i.e. responding to implementation options around the hybrid model, not the merits of progressing the model itself.

With one exception. The hybrid model introduces unique challenges in being operationalized through a double-pass dispatch run. Whilst the ESB has previously considered this workable from a theoretical standpoint, it is only through prototyping, and ultimately building the pre-production systems, that some intricacies can reveal themselves. The Consultation paper shows this with some unintuitive early prototype results in Appendix E.

The NEM is different to most electricity markets in that its market algorithm, the NEMDE, is an integral part of the power system control system itself. Thus, more important than any of the principles listed above, is confidence that the access regime can produce a stable dispatch outcome over a wide range of power system and network conditions, and most importantly, not endanger power system security.

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Currently, this critical pre-requisite does not seem assured. The ESB needs to provide a contingency plan in this eventuality. This could be upon discovery of an unresolvable "showstopper", or, more likely, a progressively growing list of implementation uncertainties that, at a certain point, justifies a systematic reconsideration of the hybrid model's benefits against its operational risks.

The following sections respond to the questions as asked in the Consultation Paper. At the end of the question list the submission includes additional comments. These should be considered of equal importance to the structured responses.

1. Priority Access Model Options

1.1 Key Design Choice

a. Queue or Centrally Determined Tiers?

The rationale for Priority Access is to encourage efficient investment decisions to be made by those who are still free to make it (i.e. before they have committed to a location), and, for that efficient investment decision to be made by the investor rather than a central planner (i.e. AEC principle #3).

Thus it follows that Priority Access would be allocated in accordance with the sequence of investment. This could be strictly date-based, or, for practical reasons, a degree of "bunching" can be employed.

The policy rationale for grouping beyond that required for practical reasons is suggested as having a degree of simplicity for investors, say a generator would fall into tier 1, 2 or 3 rather than sit within a large sequence of date bunches. However, this simplicity seems superficial as large tiers would retain the same uncertainties of access that have led to this reform.

The paper also speaks of the challenges of centrally determining tiers. This would require a controversial central judgement which would have the appearance of arbitrariness.

b. What point in connection process allocate rights?

The appropriate time is at the moment that, but not before, a connector becomes so committed to a project that abandoning is costly and unlikely. An appropriate reference point for this could be AEMO's five criteria for the definition of a 'committed, project.[1]

Timing of Renewable Energy Zone (REZ) rights is also important. Conceptually, the grouped rights of a REZ should be similar to that of a single connecting asset, with the REZ developer responsible for its sub-allocation.

1.2 Queue model

a. Strict chronological order or time-windows?

As stated above, the AEC prefers chronological order, limited by questions of practicality. Bunching into three-month quarters has been suggested from the AEC membership, which seems a reasonable interpretation of chronology.

[1] https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information

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b. Will time-windows diminish intent of access reform?

Quarterly bunches does not seem likely to materially diminish the intent and would in most cases avoid an effectively random "winner take all" where the connecting criteria between two neighboring assets was met substantively simultaneously.

1.3 Centrally determined tier model

a. First-come first served or auction?

Noting the AEC's preference against the tier model, if it were chosen, the allocation of priority within the tier should be practically chronological, for example in the quarterly approach described before.

b. Should tiers be set forever or redetermined periodically?

From an investor's perspective, the longer a period of consistency of access, the better. However, it seems that as a central agency is required to form a judgement in the tiered model, and the network configuration is likely to substantively change over time, so a periodic redetermination is unavoidable.

2. Policy Levers

2.1 Hard or soft priority access?

The AEC understands that this matter was not considered by the model's original proponents, as the priorities were assumed to be infinitely "hard", which is consistent with the AEC's first two principles. However, this would, over time, lead to more inefficient dispatch than the status quo design (contravening principle #4), unless corrected through the incentives of the Congestion Relief Market (CRM).

Priority Access, however, cannot be infinitely hard in practice as the dispatch algorithm manages power system constraints with finite constraint violation penalties. Clearly Priority Access must have softer constraints than these. It is difficult to interpret from the Consultation Paper whether this essential softening would detract from the purpose of Priority Access, and the AEC suggests the ESB should work through realistic examples of minimum softening.

With respect to achieving dispatch efficiency, the hybrid model assumes this will be achieved through CRM. If this is in material doubt, then the model itself would appear to be in doubt. Attempting to restore efficient dispatch through heavily softened Priority Access rights would appear to undermine the purpose of Priority Access. The point at which softening substantively undermines the intent of Priority Access needs to be determined by the ESB.

The policy rationale for softening beyond the minimum for system security was unclear in the Consultation Paper. In subsequent discussions with the ESB team, the AEC understands the policy rationale relates to investment incentives in the circumstance of an uncongested loop constraint. It would be preferable for first entrants to locate at places of lower coefficients, thereby retaining more network availability for subsequent entrants. Whilst understanding the issue, the AEC considers it too challenging a question to put before participants at this time without additional information about the materiality of the issue and an indication of how soft Priority Access would need to be to avoid it.

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2.2 Length of Priority Access?

As noted in the principles, the AEC considers a key rationale for Priority Access is the long-term confidence it is hoped to provide future and existing investors. It is hoped that this will in turn underpin a lower risk contract market which ultimately lowers costs for consumers.

The AEC's view is that ideally priority access should continue for the life of the asset. Indeed the AEC goes further in suggesting it could extend for the life of the *connection*. Owners of closing plants see great value in the residual site and connection and are frequently re-purposing it. This is a positive development to be encouraged as it assists an orderly transition. By retaining confidence of access from a connection, the energy company's contracting position may be smoothly transitioned from a closing legacy generator into new firm capacity.

If the ESB is reluctant to provide lifetime access, the AEC considers a short period would undermine the intent of the reform. The AEC draws the ESB's attention to the NSW Energy Roadmap which applies a 20-year timeframe.

2.3 Glide path shape

The AEC supports its previous position that if the access is to be temporary, then at the end of the period, assets that connected in the first year of the scheme would be promoted to incumbents. In the following year those that connected in the second year would be promoted, and so forth.

3. Legacy generators

3.1 How should legacy generators be assigned assign priority access?

Legacy generators should be treated as the first connecting assets in Priority Access, but otherwise identically to all other participants. This is the only way to deliver the intention of Priority Access which is to drive efficient locational decisions by those who are still in a position to make them.

Priority Access must be technology neutral as to do otherwise would undermine its purpose in providing access clarity to new and existing investors. The allocation of legacy rights is a fundamental feature of its design and must not be delegated to other parties.

With respect to suggestions of a non-technology neutral approach, it should be noted that although some fossil fuel generators have relatively uncongested current access, this may easily change in the near future. Peaking gas plants in particular are frequently located in areas of network of interest to other developers, who by connecting may put at risk the gas plants' ability to confidently provide risk management to customers.

3.2 How should legacy generators be defined ie, how should demarcation date be set?

One of the key issues here pertains to the access conditions applying at the time of the investment decision. Existing and committed projects made their investment decisions under an open access regime. It is unlikely that for recently committed projects that the expectation of access reform would have influenced the investment decision. Granting legacy status to existing and committed generation is appropriate.

The Consultation paper observes that legacy generation arrangements have the potential to cause one of two problems:

- A rush of new projects connecting especially in inefficient locations due to open access Connection in place upon making of rule; or

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- An investment strike if legacy generation arrangements are deemed to be less attractive.

To try and mitigate these problems, a cutoff for full legacy status could be implemented sooner rather than later and then a period until the rule is made for partial legacy status. However, this is only a suggestion as it is clear to the AEC that this is a complex and challenging issue which will require more consideration and consultation.

4. Settlement residue

4.1 Feedback on alternative approaches to calculate CRM settlement residue

The AEC's preference is for option 1, allocation of residue to the inter-regional settlement residue, i.e. Settlement Residue Auction (SRA) holders. The Consultation Paper however appears to conclude against this view because some the residue accumulates due to both inter and intra-regional transactions and that there is no evident algebraic method to distinguish between them.

Whilst not challenging the Consultation Paper's logic, the AEC considers the best option is to allocate the entire residue towards the SRAs. In the NEM, SRAs are notoriously non-firm which limits their effectiveness as inter-regional hedging instruments. The accumulation of dispatch residue, regardless of its exact algebraic relevance, could be used to partially remedy this issue.

The AEC suggests the CRM residue could be retained by AEMO in a pooled settlement account, and subsequently distributed to SRA holders in proportion to the level of performance of each directional interconnector observed below its nominal target. Payout timing would not be linked to pay-in timing, instead it would accumulate and be distributed across time, most likely a settlement week. In those weeks where interconnector performance was good, and payouts were below pay-ins, surplus residue would be carried into the next week. Real-time information on the settlement account could assist traders understand the level of support it was providing to their SRA position.

The AEC disagrees with the consultation paper that allocating the residue to SRAs would detract from their usefulness as a hedge. If used in the above way, by counter-acting other causes of non-firmness, the SRAs would become more, not less, useful for this purpose.

5. How to treat MNSPs

5.1 Feedback on the proposed approach for the settlement of MNSPs

The AEC agrees with the proposal of treating an MNSP as a generator-load pair and providing equal treatment to other legacy market-facing assets.

6. CRM bidding structures

6.1 Do you agree with the proposed approach to modify the CRM bidding structure?

Depending on implementation costs, the AEC supports the provision of optionality in the provision of quantity limits and buy/sell spreads, for the advantages listed in the Consultation Paper as well as possible trading benefits to a participant's broader portfolio.

6.2 Do the benefits of this proposed approach outweigh potential internal cost to traders to modify their bidding systems?

Although the CRM requires building a novel bidding system, the AEC understands that these additional features will add some costs to the build because it is not a simple replication of energy market systems.

There is a balance required, and the AEC recommends the ESB surveying how significant the additional cost is likely to be.

7. FCAS bids and settlement

7.1 Do you have any comments on the proposed approach for FCAS bids and participation in the CRM design?

The complex interactions with the FCAS dispatch are an example of the challenges of implementing a theoretical economic concept into a dispatch system that is part of the NEM's real power system control. It is difficult to answer this significant question from two pages of a Consultation Paper and hope that as more of the design is developed it can be considered further.

Noting the limited amount of information available, the AEC's initial view is that a set of FCAS CRM bids is probably not worth the complexity of its introduction. Consistent with the concept of optionality, Energy dispatch run FCAS prices should be used for energy market run settlement.

8. Other matters

Decision-making

Congestion and constraints manifest and must be managed across the national grid. Decisions around them cannot be taken in isolation within jurisdictions or TNSPs. The operational management of the scheme, from Priority Access allocation through to dispatch and settlement, should be wholly by AEMO.

This is particularly relevant if tiered Priority Access models are chosen that require planning judgement to be taken across the electrical network. AEMO has full access to the planning expertise of TNSPs and will draw on this to make national decisions when implementing the model.

Funded Augmentations

The hybrid model has been developed based on an assumption of a fully shared network, which is true for the vast majority of existing network. In the existing regime, it has not been possible for a funded augmenter to fully capture the value of reduced congestion achieved by its investment. An access model provides a theoretical potential for a funder to gain these benefits, but this has not been explored in the Consultation Paper.

There could be ways in which the improvement in network capacity achieved through funded augmentations can be recognized through Priority Access ranks.

Out of Merit Generation

Regarding questions of bidding incentives for constrained on generators and loads, the AEC reiterates its previous position preferring retention of the existing bidding arrangements and regulatory oversight. There are already wide powers for the AER to investigate bidding behaviour in response to all market incentives and there is no need to identify in the rules a subset of activities for specific attention.

It is always possible to postulate potential exercises of market power in any proposed reform, but, in most cases, these fears do not eventuate. Rather than acting on such postulations, it is better to allow the AER to use its existing powers to observe the reforms in real operation, and, should they observe a sub-optimal behaviour, allow them to use this collected evidence to propose its prohibition.

NEMDE Solve Time

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The end-to-end latency in the full dispatch cycle – from the SCADA read of dispatchable units through to the receival of targets - is presently in the order of 20 to 40 seconds. In the context of a 5-minute dispatch interval, this latency is creating challenges in efficiently dispatching the market and accessing plants' ramping capability. The AEC suspects there are existing opportunities to reduce this latency.

Unfortunately, the double-pass NEMDE run must be run in series and will unavoidably add to the latency. The AEC understands the prototype model solves in 3 seconds, not counting data transfer time. Whilst this seems a moderate increase, the AEC considers the implementation project should include an exercise to eliminate other delays in the dispatch cycle that can be removed such that total iteration time is not greater than present.

Prototyping

The AEC is very supportive of AEMO's prototyping work whose early results are discussed in Appendix E. The AEC supports this work being continued and engaged with the market, without waiting for the ESB's formal consultation periods. The AEC understands the model has been built on an Excel platform, and it may be possible to share the model with participants for their own research.

The implementation project should include a long period of pre-production running with real-time data in parallel with pre-production settlement estimates.

Limited inter-temporal divergence between EM and CRM runs

The theoretical assumption behind the CRM is that both the EN and CRM dispatch runs can fully explore the bids fed into each. However, both runs will be effectively launched from the outcome conditions of the previous iteration of the CRM. These "launch" conditions include:

- Initial MW values from dispatchable units;
- Right-hand-side values in "feedback" constraints;
- Fast-start-inflexibility-profile unit "T" status.

As both runs are then ramp-constrained, and many plants cannot move throughout their operating range within one dispatch interval, this will constrain the ability of the two runs to diverge to their natural economic outcomes.

The ESB should investigate inter-temporal operation of the model including participation by relatively slow-moving units and observe to what extent these constraints limit its ability to converge to an economic solution in both runs.

Any questions about this submission should be addressed to the writer, by email to Ben.Skinner@energycouncil.com.au or by telephone on (03) 9205 3106.

Yours sincerely,

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