

David Reynolds
Australian Energy Market Commission
GPO Box 2603
SYDNEY NSW 2001

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Dear Mr Reynolds

Capacity Commitment Mechanism and Synchronous Services Markets ERC0306

The Australian Energy Council (the “AEC”) welcomes the opportunity to make a submission in response to the Directions Paper.

The AEC is the industry body representing 20 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate the overwhelming majority of electricity in Australia, sell gas and electricity to over ten million homes and businesses, and are major investors in renewable energy generation.

Summary

The AEC appreciates the discussion in the Directions Paper which has taken forward the broad issue of how to efficiently schedule non-energy services. The understanding of the issue across the industry has substantially progressed since early 2020, when the AEC commissioned its major consultancy into the issue¹. In particular that:

- It is now generally accepted that there is no advantage of a multi-pass energy settlement;
- The fundamentally self-committing nature of the energy market should be retained; and
- That competitive provision of non-energy services should occur on the basis of the *service* offered, rather the *asset*.

The AEC considers the use of AEMO’s direction powers should only be as a last resort where circumstances have resulted the inability to procure it voluntarily. It is troubling that its use has become normalised and justified as an economic alternative to markets. The AEMC’s efforts to progress away from this situation is welcome. Both Market and Non-Market Ancillary services (“MAS” and “NMAS”) are vastly superior to direction.

As a broad theme, the AEC considers that both MAS and NMAS approaches are valid, and the best choice depends on the circumstances. The AEC’s view is that NMAS is more likely to be appropriate where an Essential System Service (“ESS”) is rarely required, highly localised or by its nature difficult to develop a common price. However the AEMC should always strive for the efficiency of the MAS approach where practical. For example, the AEC has recently shown a spot market to be promising for the procurement of Inertia².

Discussion

QUESTION 1:

- *What do stakeholders think of the characterisation of power system requirements as described above?*

¹ See <https://www.energycouncil.com.au/media/eginmtjb/20200630-cec-final-report.pdf> and <https://www.energycouncil.com.au/media/qi1j4v2i/cec-report.pdf>

² See https://www.energycouncil.com.au/media/4irjofwn/aec-inertia-market-options-marketwise-solutions_20210831.pdf

The discussion is a reasonable description of the challenges of delivering power system requirements as it transitions.

The AEC strongly supports the sentiment that services need to be *parameterised*³. This is not just a requirement for developing ESS markets, it is necessary due diligence for operating any power system. Power system operation should always fully understand and specify an engineering technical envelope that economically balances costs and risks. In short, parameterising is nothing more than good electricity industry practice.

The AEC considers that parameterisation frameworks should be overseen by the Reliability Panel, who are tasked with exploring the trade-offs between cost and risk aversion. The AEC considers the Panel has been underutilised in terms of these matters, and suggests that future papers in this line of work should investigate and clarify its expected role in these markets.

- *What do stakeholders think of about the need to transition from system configurations to service-based procurement over time?*

The AEC strongly supports this sentiment and observes two contrasting philosophies in the operation of electricity markets:

- An *asset-based* approach where assets indicate various operational costs and constraints, e.g. start-up costs and minimum loads, and the Market Operator dispatches and compensates these in order to obtain the various services that come with the asset; or
- A *services-based* approach where the services required for a secure system are pre-defined and the specific services themselves procured on a competitive basis, irrespective of the technology from which they derive.

The AEC's preference expressed throughout discussions in the Energy Security Board ("**ESB**") P2025 Review is very much the latter. That also seems to be the direction posed in this chapter.

One of the challenges is scoping what is in fact a "service". With respect to an engineering phenomenon that is quite unrelated to energy, such as system strength, this clearly represents an ESS for which a recruitment mechanism must be developed: there is no debate about this.

A matter which is often debated relates to managing changes in the supply/demand balance of energy itself. For example the power system's ability to ramp to a new dispatch point, or to provide reserves, say over timeframes of about one hour. A first glance at an energy-only market might suggest these are not rewarded, as they are not energy per se. However as the AEMC explained in chapter 4 of its Directions Paper into Operating Reserves⁴, these are implicitly valued through the variations and risks of the energy-only price, and the contract markets that surround that price. When contemplating the definition of a new service, it is important to explore, in the manner done in that paper, whether or not a postulated new service may already be encompassed within an existing one.

Whilst agreeing with the sentiment of the paper and question, the AEC points out the philosophy was not evident in the draft determination recently produced by the AEMC on Primary Frequency Response ("**PFR**")⁵. Instead of parameterising and competitively procuring this ESS, the AEMC has determined to permanently oblige its provision from all registered resources of specific technology types. This appears to be a case of consolidating the system configuration approach. It would be helpful if the AEMC could explain why the philosophies expressed in this paper should not apply to PFR.

³ Directions paper page 19

⁴ <https://www.aemc.gov.au/sites/default/files/2021-01/Reserve%20services%20directions%20paper%20-%2005.01.2021%20-%20FINAL.pdf>

⁵ <https://www.aemc.gov.au/rule-changes/primary-frequency-response-incentive-arrangements>

QUESTION 2: QUESTIONS ON THE CURRENT ARRANGEMENTS

- *What are stakeholders views on the AEMC's characterisation of the current arrangements to produce dispatch schedules and ensure the power system remains secure?*
- *What are stakeholders perspectives on the AEMC's view that the implementation of either the MAS or NMAS approaches should ultimately transition to procuring unbundled system services as operational and technological knowledge improves?*

The discussion is largely a fair reflection and the AEC strongly supports moves to the MAS or NMAS approaches as appropriate.

The reflection that directions are to be used as a last-resort⁶ is strongly endorsed by the AEC, which was always the intent of this power. The power system should be planned, and the market designed, such that directions are never *expected*. Only when an event arises that could not have reasonably foreseen is it appropriate to use the power. Indeed this is why the Rules oblige a post-direction reporting function, to ensure a direction is not repeated.

The AEC finds it troubling that the use of directions has instead become normalised, and is being intentionally chosen as an apparently economic alternative to competitive procurement, particularly by networks. The very high number of directions in recent years have arisen not just because of the challenges of operating a transitioning power system, but also very much by the reliance upon AEMO's intervention powers as an alternative to competitive procurement.

The use of direction, even if it may appear expedient and inexpensive, is highly corrosive to the power system. It:

- Distracts from good planning and design (by each of AEMO, networks and the AEMC);
- Entrenches the role of historic provision;
- Excludes new entrants and innovation; and
- Exposes the power system to serious disruption once traditional sources become unavailable.

It would be helpful if this line of work reinforces the need to interrupt the current practices that are normalising of the use of direction.

QUESTION 3: QUESTIONS ON THE MAS APPROACH

- *What are your views on the trade-offs identified between the linear and binary formulation of constraints?*

The fundamental design of electricity markets around common-clearing prices links naturally to the shadow prices of marginal constraints repeatedly recalculated in real-time. Even though a real power system has many characteristics of a binary or inter-temporal nature, attempting to incorporate these characteristics within a central dispatch system and a common-clearing price is generally undesirable. The challenges that immediately arise include:

- Computational challenges and delays;
- Common-clearing prices that do not align with the merit order of dispatch;
- Difficulty in capturing the non-linear characteristics from the resources;
- Removal of incentives on participants to minimise and self-manage resource inflexibilities;
- Creation of opportunities to maximise profit inconsistent with the dispatch objective;
- The presentation to the market operator of a central optimisation problem that is so complex it becomes intractable.

⁶ Directions paper page 46

The self-committed nature of the market leads to the management of these inflexibilities occurring outside the central dispatch process by the resource owners themselves, and described positively as a “Market Scheduling ecosystem” in the AEC’s June 2020 consultancy⁷.

These concepts and issues are not new. Real generator plants have many binary characteristics, including in their production of energy. Self-committing generators successfully use AEMO’s forecasting and active rebidding to overcome them.

Similarly the provision of contingency Frequency Control Ancillary Services (“**FCAS**”) are typically all on or off. Yet providers bid them into the market as if they were continuously variable. This is understood by the provider and AEMO, and so when an FCAS is marginally dispatched, a provider will typically over-deliver in order to comply with dispatch. The resulting apparent underpayment is accepted as a penalty of inflexibility. Again, rebidding can be used to reduce the incidence of marginal dispatch of binary assets.

The AEC’s proposed spot market for inertia operates similarly to contingency FCAS, in that marginally dispatch providers will typically over-deliver.

- *Would the transparency of the market improve under this MAS approach, and how important of a consideration is this?*

The MAS approach is naturally more transparent and open to competition to the NMAS approach. An important feature of making such a market work is to provide forecasts of that market’s likely operation, including prices where possible. This means including indicative prices within the pre-dispatch as is done with FCAS, and, if possible, including volume information within the PASA tools.

With respect to investment timeframes, forecasts of ESS requirements should be included in the Electricity Statements of Opportunities (“**ESoO**”), for both MAS and NMAS approaches.

The transparency of MAS lends itself to secondary benefits:

- The use of common-clearing prices enables risk management by participants. Whilst ESS hedging may never be as deep and liquid as energy, there are examples of participants entering bespoke arrangements to transfer FCAS risks, which is only feasible with a common clearing spot price arrangement.
- Participants can make use of a MAS’ transparency to adjust real-time behaviour to alter their exposure to the revenues or funding of the MAS. For example, generators attempt to improve their dispatch conformance in order to minimise exposure to regulation FCAS causer-pays calculations.

QUESTION 4: QUESTION ON THE NMAS APPROACH

- *Would the transparency of the market improve under this approach, and how important of a consideration is this?*

Whilst better than AEMO direction, the NMAS approach is not an inherently transparent approach. It may be possible to provide some forecast volume information, but the design does not seem to produce a meaningful common price for publication.

Similarly to the MAS approach, in the investment timeframe forecasts of all ESS requirements should be included in the ESoO.

QUESTION 5: QUESTIONS ON THE COMMISSION’S RECOMMENDATIONS

⁷ <https://www.energycouncil.com.au/media/eginmtjb/20200630-cec-final-report.pdf>

- *Do you think that either option would result in more a more efficient, secure dispatch?*
- *Weighing up the inherent limitations of both approaches, which is likely to be more efficient, and why?*

The AEC largely agrees with the ESB conclusion that the NEM should seek to introduce spot markets if and when practical to do so. Ultimately a MAS, if practical, should result in the more efficient and secure dispatch. However, for some services it may be better to at least begin with an NMAS approach. This is particularly the case in more localised or obscure ESS where it is difficult to identify a way to produce a meaningful common clearing price.

Indeed the AEC has perhaps shifted in its position in this regard, submitting to the ESB in July 2020 doubt that MAS approaches were practical for the more obscure ESS' being discussed⁸. However, it recently engaged advice that shows, for example, that a spot market in inertia is indeed quite practical⁹.

The AEC disagrees with the concerns¹⁰ that the time taken to converge MAS within a decentralised ecosystem may not achieve a secure or efficient convergence, and that in the meantime AEMO may feel a need to intervene. Identical fears were presented before market start with respect to the self-commitment of generators to meet peak demands, however actual operation has shown the strong decentralised incentives probably produces a more secure outcome than its centralised predecessors.

One way to overcome concerns about the time taken to converge the decentralised process is to linearise any binary variables in the predispatch environment. For example, this is done with the Fast-start-Inflexibility-Profile (“**FSIP**”) binary quantities, which, whilst the forecast is arguably infeasible, presents a probabilistic prediction that is most useful for the forecasting environment. Indeed the switch from the linearised probabilistic forecast environment to the binary deterministic dispatch environment is analogous to the moment of opening the box of Shrodinger’s cat.

- *Which option might better address concerns relating to the exercise of market power by service providers?*

Market power, where it arises, is a characteristic of physical circumstances and is ideally addressed through actual or threatened entry, or, in very exceptional cases, through regulatory intervention. Market designers should never attempt to address it through a sub-optimal market design.

It is often incorrectly posited that spot market arrangements are more open to exploitation of imperfect competition. This is a fallacy: market power can be exercised in either. Commentators incorrectly assume spot markets are more prone to it because it is more readily observable in a transparent market design. Hiding market power behind opaque contracting arrangements is ultimately counter-productive.

- *Do you think that either option would result in greater market transparency? Which option would be more transparent?*

The MAS approach appears self-evidently more transparent.

- *Which option might provide more efficient long-term signals to market participants, better influencing their investment and disinvestment decisions?*

⁸ See page 2 of <https://www.energycouncil.com.au/media/kxmdnrqf/20200624-aec-fti-ess-comments.pdf>

⁹ https://www.energycouncil.com.au/media/4irjofwn/aec-inertia-market-options-marketwise-solutions_20210831.pdf

¹⁰ Directions Paper page 63

As discussed above, the key way to encourage investment is through long-term ESoO forecasting of needs.

Neither approach directly provides investment signals. NMAS arrangements tend to be too short, and entered into too late, to be a basis for significant asset investments.

On the other hand, a MAS arrangement provides revenue certainty only for five minutes. However the greater transparency and apparent fairness of the market provides greater opportunity for investors to speculate on future revenues. To the extent a common clearing price is created, the opportunity arises for risk management tools to provide an underpinning investment case.

QUESTION 6: QUESTIONS ON THE COMMISSION'S RECOMMENDATIONS

What are stakeholders views on the Commission's recommendation of the NMAS approach?

As stated above, there are roles for the MAS and NMAS approach for different ESS and at different times. However the AEC feels the AEMC should be looking to evolve markets towards the MAS approach wherever practical.

Conclusion

The AEC feels the paper has usefully progressed discussion of many broad issues. The desire to specify services, and to avoid use of directions power, is strongly supported.

The AEC considers that NMAS and MAS approaches have value depending on the service being considered, but agrees with earlier work by the ESB that the market should be moving towards MAS approaches when and where practical.

Whilst broadly agreeing with the issues raised in both approaches, the AEC feels the challenges of the MAS approach have been over-stated in the paper, and the disadvantages of the NMAS understated.

Any questions about this submission should be addressed to the writer, by e-mail to Ben.Skinner@energycouncil.com.au or by telephone on (03) 9205 3116.

Yours sincerely,



Ben Skinner
GM Policy
Australian Energy Council