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Australian Energy Market Commission
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Dear Mr Reynolds

Primary Frequency Response Incentive Arrangements ERC0263

The Australian Energy Council (the “**AEC**”) welcomes the opportunity to make a submission in response to the Draft Determination on Primary Frequency Response (“**PFR**”) arrangements.

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 recognises the journey the AEMC has undertaken over the last 3 years regarding PFR. The AEC has always accepted that narrow band frequency performance in the NEM had become unacceptable in the latter half of last decade. The AEC also accepts that the roll out of the mandatory PFR requirement has been mostly successful.

During 2020-21 the AEC engaged closely with the AEMC and helped develop its then preferred “pathway two” which:

1. Introduced a funding mechanism during the period of mandatory narrow-band PFR, providing a “soft-start” for the mechanism; and
2. After a period of operation, moving the mandatory narrow-band PFR to wide-band PFR, allowing the market mechanism to determine provision of narrow-band PFR whilst also providing mandatory a safety-net for major disturbances.
3. Empowered the Reliability Panel to determine appropriate frequency standards to which the market mechanism can be tuned.

The AEC is disappointed that the AEMC has now discarded this approach through a pathway largely bilaterally arranged with AEMO outside market consultation and the technical working group.

The AEC maintains its view that the mandatory PFR sunset be retained, or if necessary, extended to allow a longer step 1 above, before ultimately introducing step 2. Failing that, the AEC recommends a statutory review of mandatory PFR be conducted in the middle of the decade.

The AEC is interested in the funding mechanism proposed through the enhanced causer-pays approach, but is disappointed this was conceived outside industry consultation or the Technical Working Group and presented as a *fait accompli* in the draft determination. There remain fundamental unresolved technical questions about its design. In contrast, the AEC is supporting deep research into demonstrating and socialising the Double-Sided-Causer-Pays (“**DSCP**”). For these reasons at least, the AEMC should extend its final determination, with an intersecting report.

Whilst supporting further work on the funding mechanism, the AEC firmly considers it will be seriously undervalued by the presence of mandatory narrow-band PFR. This in turn will undermine

investment in its future delivery, which, as AEMC's consultant GHD has pointed out, could lead to a serious shortage of PFR headroom by the end of the 2020's. That will presumably require an adjustment or additional mechanism, and so this needs consideration against moving now towards an enduring arrangement.

The AEC does not support delegating development of the mechanism at this time to AEMO and instead considers this should be considerably furthered by AEMC. This will require an extension to the current timeframe of 4 – 6 months. During this time the AEMC should engage research into its operation and undertake another round of consultation.

Discussion

The role of mandatory PFR

During the rule change process that ultimately introduced mandatory PFR, the AEC strongly expressed its concerns that a mandatory provision of narrow band PFR was distortionary and risked undermining the appropriate valuation needed to retain and invest in new sources of good frequency performance. Nevertheless the AEC accepted that narrow band frequency performance had become unacceptable and accepted the rule change as an emergency measure, appropriately limited by a three-year sunset allowing time to develop a market mechanism that would ultimately incentivise its voluntarily provision.

The AEC engaged in good faith with the AEMC's process and suggested a pathway that would provide all parties confidence¹. That included:

- A concession that at the sunset date the obligation would revert to wide-band frequency support. Wide-band mandatory PFR was acknowledged to create a (lesser) distortion, but alleviated concerns that a safety net was needed for non-credible contingency events.
- Substantial investment by AEC and ARENA into demonstrating one promising form of market incentive that could be used to retain satisfactory narrow-band PFR following the sunset.

The AEC does not disagree with the advice obtained by the AEMC that the rollout of mandatory narrow-band PFR has been mostly successful² and that directly measurable costs of the new obligation on conventional plant appear low.

The AEC considers there will likely accrue greater issues in the long-term, especially as the number of synchronised conventional plants diminishes. This is evidenced by the observation that the final stages of the rollout, which introduced non-conventional plant to mandatory narrow-band PFR, did not show material improvement in narrow band frequency control. This was to be expected due to the exemptions provided to batteries not in an export mode, and the natural lack of headroom affecting solar and wind provision.

However the *costs* of the obligation were never AEC's primary concern. This was that any form of mandatory obligation would fail to identify the true *value* of the provision of PFR. Rewarding value is essential to ensure that providers continue to deliver the service, and that new entrants invest in its future provision. It is also essential to the quality of its delivery, particularly in the provision of headroom to support PFR.

AEMO's desire to maintain mandatory PFR results from a static consideration of the easiest system operation within the current market structure. It does not contemplate dynamic long-term effects, though AEMO acknowledges additional market mechanisms (beyond the causer pays proposal here) will be needed in time as the fleet changes.

¹ <https://www.energycouncil.com.au/media/tjge0qzi/20200922-aec-pfr-submission.pdf>

² The AEC does not however evidence of a worrisome oscillation as a result of the mandatory PFR.

AEMO's claim that global PFR is necessary in order to have most confidence in the calibration of its own power system models is also short-sighted. This suggests AEMO's models are not being prepared for a future where rapid changes in fleet or commitment patterns have dramatically changed the incidence of PFR. Contrarily, it is safer for AEMO to have a known quantity of pre-defined PFR recruited by a market mechanism rather than rely on the unpredictable PFR that arises as a by-product of the energy market.

AEMO also claims that mandatory PFR is necessary for geographic diversity of its provision. The AEC contrarily suggests that mandatory PFR has the opposite effect: occurring purely as a by-product of energy dispatch its geographic incidence will be quite random. In contrast a market mechanism can readily specify regional quantities.

In its submission to the Directions Paper³, the AEC counselled the AEMC against relying on AEMO for market design, rather than technical advice:

“The Directions Paper over-emphasises the importance of technical advice yet to be delivered by [AEMO] in its consideration of frequency control market design. AEMO's technical input is critical, but the process described in the Directions Paper appears to place AEMO outside its role by inviting it to independently propose and assess market designs from an economic perspective. The AEC considers instead that AEMO's technical skills be leveraged under AEMC guidance, for example by studying the practicality of designs developed within the AEMC's work.”

Nevertheless the AEMC appear to have drawn its pathway for PFR market design primarily from AEMO's position as presented in its Technical Paper “Enduring PFR requirements for the NEM”⁴. AEMC appear to have been convinced that only a mandatory PFR will provide the security confidence (considered with respect to the existing NEM fleet) that AEMO desire. The AEC disagrees, as it is always feasible to design a market mechanism that could deliver any specified security outcome. Having determined this desired outcome, the choice of whether it is more efficient to recruit the PFR service by fiat or incentive is a purely economic question for the AEMC, not an engineering one for AEMO.

Way forward for sunset

The AEC therefore does not support abandonment of the sunset. The draft determination appears to acknowledge that some kind of additional mechanism (beyond enhanced causer pays) will be necessary to value PFR and headroom before the end of the 2020's and alludes to a future activity to develop one.

In 2019 the AEC expected that that would develop within this process in time for the three-year sunset. Recognising that progress has not been made, the AEC recommends extending rather than abandoning the sunset such that this long-term arrangement can be developed. Development of the arrangement could be done within this rule change or in another forum, possibly a self-initiated review.

If the AEMC is determined to expunge the sunset, then the AEC recommends that a date for a statutory PFR review be inserted into the rules well before the likely emergence of the difficulties described. This review's scope should include the need to procure sufficient headroom-supported PFR following the withdrawal of traditional providers, and whether it remains necessary to retain mandatory PFR provision.

³ <https://www.energycouncil.com.au/media/3uzn1qpt/20210204-erc0263-frequency-control-rule-changes-combined.pdf>

⁴ <https://aemo.com.au/-/media/files/initiatives/primary-frequency-response/2021/enduring-pfr-requirements-for-the-nem-technical-white-paper.pdf?la=en>

The Consultation Process

The AEMC has been working on an enduring pathway for PFR since it determined to introduce a temporary mandatory PFR rule in June 2020. It engaged a large Technical Working Group (“**TWG**”) and constructively presented possible pathways beyond the June 2023. In particular, the “Pathway Two” seemed largely to reflect the AEC’s thinking as submitted in September 2020⁵, and, at the time of the Discussion Paper, was presented as AEMC’s preference. It was also the direction implied by the Energy Security Board (“**ESB**”) Essential System Services (“**ESS**”) line of work wishing to unbundle and fill the “missing markets” of unrewarded ESS⁶. Consistent with that expectation, the AEC, several members and the Australian Renewable Energy Agency (“**ARENA**”) made a substantial investment into demonstrating a funding mechanism that could deliver secure PFR outcomes beyond the sunset.

The dominant view from the ESB, participant submissions and TWG discussion was consistent with Pathway Two. AEMO was known to favour Pathway One, but did not openly debate this within the TWG nor consult with participants regarding the preference articulated in its Technical Paper. The AEMC’s draft determination of Pathway One is therefore frustrating for all other parties who engaged in the AEMC’s process in good faith and with large efforts in expectation that their views would be reasonably considered against other views.

The AEMC has compounded this consultation failure by surprising the industry with a complex new mechanism revealed at the Draft Determination stage. Instead of developing this progressively in concert with the TWG and investing in analytical modelling, it has been presented as a *fait accompli* in the Draft Determination. The Draft Determination acknowledges many open questions regarding its design but passes these matters to AEMO to determine after the AEMC has made a high-level rule in early December 2021. This is not acceptable.

By way of contrast, the AEC was aware of the AEMC’s uncertainties regarding one of its preferred market designs; DSCP. The AEC understood that it could not be furthered unless detailed analytical work were conducted to prove its effectiveness and revenue outcomes. The AEC agreed with this caution and invested in a major quantitative modelling exercise exactly to give the AEMC that confidence.

Thus, the AEMC has shown a double standard regarding its preparedness to adopt an unproven model in comparison to its previous demands for detailed demonstration of DSCP theory.

Given its very recent exposure to the industry, the AEC considers it is far too early for the AEMC to be confident that it will satisfy the issues identified by GHD, and indeed whether it will produce reasonable results. It is also too early to expect stakeholders to yet have the understanding to provide the sophisticated feedback the AEMC seeks to the draft determination.

The AEC suggests the AEMC should immediately extend the completion time of this Rule Change of 4-6 months, with an additional consultation stage. This consultation stage should be informed by detailed development of the Enhanced Causer-Pays concept and modelling of its outcomes with historical 4 second data.

As discussed above, the AEC undertook such an exercise with the DSCP theory in direct response to uncertainties expressed by the AEMC about its practical implementation. The AEC sees no reason why the AEMC should not undertake the same diligence with respect to its preferred mechanism.

Enhanced Causer-Pays

The AEC broadly understands the theoretical intent of this mechanism, however in the absence of

⁵ <https://www.energycouncil.com.au/media/tjge0qzi/20200922-aec-pfr-submission.pdf>

⁶ <https://esb-post2025-market-design.aemc.gov.au/>

at least some degree of back-casting, cannot provide any meaningful commentary on its likely effectiveness.

The AEC's main observation is that the concept is too underdeveloped and unproven to pass on to AEMO at this time. The AEMC should develop and model its operation in considerable detail before determining a rule. That rule may leave much of the parametric specification to AEMO's procedures, but the reform should not leave the AEMC's control until the design is effectively fully specified.

Such an approach would also be consistent with AEMC's normal good regulatory practice. Consider for example the Wholesale Demand Response mechanism: Appendices E, F and G of that final determination⁷ comprehensively specify its design with respect to obligations, baselines and settlement flows respectively. The sort of detail presented in Box 10 of that report is the level AEMC should strive to achieve for enhanced causer pays before it transfers the implementation task to AEMO.

Whilst the AEC has always been supportive of a mechanism that rewards PFR performance, it is necessary to be first explicit on the *objective* of the mechanism. As far as the AEC can determine, this appears limited to a form of *compensation* for performing a PFR obligation, rather than a *valuation* to encourage investment in its delivery or quality. That objective may then justify what appears intended to be a low-powered mechanism.

That leaves open however the question of how to address GHD's concern of declining provision of PFR headroom over time. It is not clear whether AEMC considers the enhanced causer-pays mechanism is intended to achieve that, or if it anticipates developing another mechanism in future years. The AEC's view is that this seems likely to be necessary, and, if so, the AEMC should contemplate whether it makes sense to introduce what will be only a short-lived scheme or instead move immediately to design an enduring arrangement.

A concern raised in the TWG is that rather than this new scheme being effectively double-sided, i.e. with causers compensating correctors, the majority of revenue compensating correctors will be drawn from the proposed socialised levy. Whilst not rejecting this result, the AEC would find it disappointing that it could not achieve the enclosed self-funding nature of DSCP. Confirming this feature is a reason it is essential to backcast its operation before determining the rule.

Another observation is the use of the FCAS regulation as a multiplier in the power of the payments. The DSCP work sponsored by AEC and ARENA had considered but rejected this as it does not appear to be relevant to the value of correcting frequency at any time. The Regulation price reflects instead the insurance value of presenting the capability to correct frequency, rather than what appears to be the AEMC's objective here: compensating for the actual travel work involved in correcting frequency. The DSCP work prefers the use of the current spot energy price as a more appropriate multiplier to apply to the value of PFR travel work.

Conclusion

In summary the AEC is disappointed that the AEMC has chosen to go against its previously preferred "Pathway two" direction, which was consistent with the vast majority of stakeholder input and ESB Post 2025 direction. Instead it has gone outside its own consultation process and acquiesced to one party's view: AEMO. The AEC considers this unreasonable, and the AEMC's reliance on mandatory PFR short-sighted, being likely to create major difficulties from the middle of this decade as the type of plant that its success relies upon withdraws.

The AEC therefore suggests the sunset should be extended rather than expunged. If that is not acceptable, a statutory review of mandatory PFR should be set for the middle of the 2020's.

⁷ https://www.aemc.gov.au/sites/default/files/documents/final_determination_-_for_publication.pdf

The AEMC revealed in the draft determination for the first time, a rudimentarily developed payment mechanism intended to operate in concert with mandatory PFR. It has not provided a fulsome design, nor modelled its operation, yet has asked for detailed feedback within the standard stakeholder submission time. It is also proposing to delegate to AEMO the bulk of its design work, despite AEMO's repeated dismissals of the role of any PFR market mechanism.

This is not acceptable. The AEMC needs to immediately move to extend its final determination and conduct detailed design and analytical work using real backcasting data on the mechanism. The results of that should be shared through an intersecting consultation paper and additional Technical Working Groups. When that is complete, a fulsome blueprint should be passed to AEMO.

Whilst the AEC is supportive of a mechanism, it considers that any mechanism will be seriously undermined in its attempt to determine a PFR *value* by the presence of mandatory PFR. This in turn will cause a serious shortfall when the conventional coal-fired steam plant that it relies upon is no longer there to support it. For these reasons, the AEMC needs to set up a process that will, by the mid 2020's, design a market mechanism to replace what will become an ineffectual mandatory arrangement.

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,



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