



31 October 2019

John Pierce  
Chairman  
Australian Energy Market Commission

Lodged online: [www.aemc.gov.au](http://www.aemc.gov.au)

Dear Mr Pierce

### **AEMC: CONSULTATION PAPER ON MANDATORY PRIMARY FREQUENCY RESPONSE**

Origin Energy Limited (Origin) welcomes the opportunity to provide comments on the two rule changes submitted by AEMO on the provision of Primary Frequency Response (PFR) in the National Electricity Market (NEM) along with the rule change submitted on the same issue by Dr Sokolowski.

We understand that the proponents consider that frequency deviations are an urgent problem and that immediate action is necessary to preserve system security. To this end the rule changes propose new mandatory obligations on generators to maintain frequency within a narrow deadband.

In our view the mandatory provision of PFR is unlikely to be the most efficient means of providing the service, and a market based approach should be developed. If the AEMC considers that greater levels of PFR are required in the immediate term, we suggest that this should be through a contracting arrangement that could be developed relatively quickly.

A blanket mandatory requirement for PFR absent an appropriate compensation regime could distort existing frequency control ancillary service (FCAS) and energy markets and discourage innovation in the future provision of primary frequency response by new entrants.

Ultimately the AEMC should be looking to develop efficient market-based solutions for PFR alongside other system security services.

The below attachment expands further on these points. Should you have any questions or wish to discuss this submission further, please contact Alex Fattal via email [alex.fattal@originenergy.com.au](mailto:alex.fattal@originenergy.com.au) or phone, on (02) 9375 5640.

Yours sincerely

A handwritten signature in blue ink, appearing to read "Steve Reid".

Steve Reid  
Group Manager, Regulatory Policy

## **ATTACHMENT 1: DETAILED COMMENTS ON ISSUES RAISED IN THE CONSULTATION PAPER**

### **Mandatory Primary Frequency Response could distort existing markets**

A mandatory obligation for the provision of PFR will cause generators to face higher ongoing costs. If a service is valued by the market operator, the parties that bear costs in supplying this service should be compensated. The alternative is that any costs from providing the service will be inefficiently recovered through other markets.

We are concerned that the rule changes do not fully consider the impact on the existing Frequency Control Ancillary Service (FCAS) markets. AEMO's draft Primary Frequency Response Requirement (PFRR) (which was provided with the rule change request) sets out that generators would not be required to reserve headroom or stored energy to comply with the mandatory requirements. However, maintaining a narrow deadband in the system would most likely require headroom to be called upon in some situations. As generators are currently required to provide headroom as part of the provision of contingency FCAS, we are concerned that this headroom will be increasingly called upon to support the PFR needed to maintain the system frequency within the narrow deadband.

This could have two adverse impacts on the provision of FCAS:

- More wear and tear for generators offering contingency FCAS, which would be factored into the offers of supplying the service.
- If the generators supplying contingency FCAS end up providing PFR for movements within the normal operating frequency band, this could diminish available headroom for contingency events.

However, if generators are compensated for PFR, the potential of such distortionary impacts on FCAS markets are minimised as generators would optimise their provision of PFR and FCAS.

#### *Mandatory obligation removes incentive for long term investment in frequency response capability*

New entrants are unlikely to invest in frequency response capability beyond the mandated minimum if there is no financial incentive to do so. With a financial incentive, new entrants will be able to evaluate the value of investing in improved mechanisms or technologies for fast frequency response. As existing synchronous generators exit the market, batteries could have an increasingly important role in providing fast frequency response and thus supporting system security. However, for this future investment to be provided in the NEM, a method of incentivising the service would have to be introduced.

### **Implementation of a two-stage model to encourage frequency response**

Origin considers that the best way of encouraging the provision of PFR is through actively sourcing from generators the appropriate level of frequency response. However, we understand the concern that developing a market approach to funding PFR will take time, and that AEMO has outlined the need for immediate action.

Therefore, we propose that the AEMC introduce a two-stage approach to the provision of PFR.

- In the short term, AEMO could contract with generators to procure PFR. Such a contracting arrangement is consistent with Option D from the AEMC consultation paper.
- In the longer term, the AEMC should introduce a market-based mechanism for the provision of PFR.

The short-term contracting arrangements could be based on international templates for policies to provide frequency response, including those in the UK and Ireland.

In the UK generators are required to ensure that they can provide frequency response when connecting. Generators who are instructed to operate in a frequency sensitive mode are compensated through a holding payment for being available to provide PFR. Additionally, they can receive a response energy payment for energy delivered through provision of the frequency response service.<sup>1</sup>

In the Irish market, the market operator has entered into contracts with synchronous generators to provide a Synchronous Inertia Reserve and Primary Operating Reserve, alongside the introduction of Fast Frequency Response contracts with battery investors.

*Causer pay arrangements can provide a long term basis for valuing frequency response*

In the second stage, we consider that the AEMC should introduce a technology neutral approach to provide real-time price signals for frequency response.

The rule change requests identify that the current operation of the causer pays arrangement may not provide a clear signal for generators. Causer pays arrangements for frequency response should aim to provide a clear signal of the costs and value of frequency response to generators.

The deviation pricing model that the AEMC outlined in the Frequency Control Frameworks Review could be considered as an iteration of the causer pays principle for FCAS. As set out by the AEMC, the deviation pricing model for incentivising frequency response involves the causer pay factor becoming two sided. Any deviation from dispatch targets to support the restoration of system frequency (i.e. PFR) is compensated, while deviation which causes frequency to move away from 50Hz is penalised.

### **Two stage implementation provides an opportunity for market trials**

An additional benefit of a two-stage implementation of the rule change would be the ability to gain a greater understanding of the operation of the power system and individual generators under the changes.

In the Frequency Control Frameworks Review the AEMC recommended that there should be mainland and Tasmanian trials of frequency control to investigate the provision of PFR. This proposed way forward was reinforced by Dr Undrill in his expert report provided to AEMO which stated that “[t]he only reliable way to assess claims in favor of, or in opposition to, changes in practice regarding primary control might be to make field trials. Such trials would be a large undertaking because it would be necessary to have a significant fraction (one third or more) of the connected turbine-generator capacity have its governors set to act in a proposed manner.”<sup>2</sup>

However, AEMO has progressed directly to a rule change request without the mainland trial due to concerns about the urgency of the issue. Consequently, there is little information to assess several technical specifications for PFR in the NEM. The specifications referenced in the rule changes where information is lacking include:

- The deadband level that generators can effectively meet, and frequency outcomes across the NEM when generators operate with that deadband.
- The optimal headroom that generators would be obliged to maintain. Requiring generators to reserve headroom would have substantial cost implications. However, without headroom available generators are not as capable of providing PFR in some circumstances.

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<sup>1</sup> AEMC, 2019, *Mandatory Primary Frequency Response Consultation Paper*, p119.

<sup>2</sup> Undrill, J, 2019, *Notes on Frequency Control for the Australian Energy Market Operator*, p 12

- The length of sustainment of the frequency response that generators can supply, along with how this will interact with the secondary frequency response procured in the FCAS market.

We consider that the initial contracting period could allow for the above issues to be better understood and assist in the development of any long term market based mechanism.

#### **Clarity needed on compliance with dispatch instructions**

AEMO and Dr Sokolowski both raise concerns that obligations for generators to strictly follow dispatch instructions are lessening their capabilities to respond to changes in frequency. Our understanding is that generators have altered governor settings to ensure closer matching with dispatch instructions to minimise the potential for accidental non-compliance with the rules. We agree that the NER should be clarified so that a generator providing PFR is not in breach of its dispatch obligations.

#### **Initial compensation should include modelling costs**

If a mandatory response is introduced, then generators should be able to recover their initial set up costs such as changes to control systems. The compensation set out by AEMO's rule change does not include the cost of modelling the response of generating units. For some older units, this modelling may be as costly as the necessary control system alterations. The transitional funding should allow generators to recover the cost of such modelling as AEMO may request these models to monitor the operation PFR.