



14 February 2020

Mr John Pierce AO  
Chairman  
Australian Energy Market Commission

Lodged via AEMC website

Dear Mr Pierce,

### **PROJECT ERC0274: Mandatory primary frequency response**

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in renewable energy and energy storage along with more than 6,500 solar and battery installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

The CEC welcomes the opportunity to provide comment on the Australian Energy Market Commission's (AEMC) consolidated rule change draft determination relating to the introduction of a 3-year mandatory requirement on generators to provide primary frequency response (PFR). The CEC recognises that stable frequency is an important part of maintaining a secure power system. As such, we support measures to improve frequency performance in order to facilitate the continued transition to a system with increasing levels of asynchronous generation.

The CEC welcomes the recognition from the AEMC that a mandatory PFR requirement is not a complete solution and does not incentivise the provision of PFR from those generators that are best placed to provide it. We strongly support the inclusion of the sunset on the mandatory requirement in lieu of an alternative PFR mechanism such as a direct contracting model. The CEC suggests that the work program to develop the incentive framework for the provision of PFR in the NEM is progressed with high priority.

Given this, we suggest that the sunset on the mandatory requirement is enhanced to ensure a smooth transition to the forthcoming incentive framework. The National Electricity Rules (NER) drafting should allow for the sunset to end earlier than planned, based on progress to develop and implement an incentive framework.

The CEC supports the AEMC's decision to elevate certain elements of the Australian Energy Market Operator (AEMO) Primary Frequency Response Requirements (PFRR) document to the NER to ensure generators have certainty over critical design elements at this rule proposal assessment stage. It is likely the development of the interim and final PFRR

document will prompt further elements that should be elevated to the NER. Given that the development of the PFRR will begin between the draft determination and the final rule, we suggest the AEMC monitor the PFRR development process for additional potential design elements that would be better suited to the NER to provide security for generators against further changes to the PFRR.

Our attachment outlines further comments and suggested refinements to the draft rule, along with preliminary comments regarding the development of the incentive framework.

Thank you for the opportunity to comment on this consultation. The CEC looks forward to participating in the upcoming development of the incentive framework. If you would like to discuss any of the issues raised in this submission, please contact Tom Parkinson, Policy Officer, on (03) 9929 4156 or [tparkinson@cleanenergycouncil.org.au](mailto:tparkinson@cleanenergycouncil.org.au) or myself, as outlined below.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lillian Patterson', written in a cursive style.

Lillian Patterson  
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## **Sunset**

As outlined above, the CEC strongly supports the inclusion of the sunset to the draft rule. A sunset is important to ensure that the mandatory requirement is not relied on to control power system frequency for longer than is required to develop the incentive framework. We trust that the AEMC has used best judgement to set the sunset date as 4 June 2023, however, this does not eliminate the potential for the framework development and implementation to be completed earlier than the sunset date. If the development of the framework is completed quicker than anticipated, then the mandatory requirement would no longer be required and as such should be removed and replaced immediately by the newly developed incentive structure. The development of the incentive framework should happen as quick as possible, however, this should not come at the expense of the effectiveness of the forthcoming framework.

We believe adopting further refinements to the sunset provision would enhance the draft rule to ensure the mandatory PFR requirement is fit for purpose.

## **Additional costs**

The CEC is concerned that the AEMC is not considering the significant opportunity costs that will face renewable generators and batteries as a result of this rule change.

While it is important that exemptions are available for high upfront upgrade costs, this does not factor in the ongoing operational costs that generators will face when they reduce output in response to over frequency. Renewable generators leverage the natural resources available at that location at that specific point in time and as such will only typically provide lower services as most of the time, they will be maximising the natural resources available. As a result, if they ramp down in response to over frequency, the 'fuel' is lost and will result in a loss of revenue due to lost energy. We note that the expected frequency performance in the NEM should improve this situation, however, this is not guaranteed and as the rule change request presents little analysis to forecast the frequency improvement it is not certain that this will be the case.

Through discussions with CEC members, we estimate an 0.75% loss of energy over a year of operation due to the mandated PFR requirement. This would represent a material loss of revenue and could have significant impact on the commercial operation of a generator.

It is also important to note that the draft determination does not take into consideration the opportunity costs related to a battery complying with the mandatory PFR. When a battery is responding to under frequency in the system it will be sending out additional energy as per the PFR requirement. The generator is not paid for this energy and it is therefore lost. For a standard generator, this energy is 'replaceable' as there is continued wind and solar available as fuel. For a battery, stored energy is finite and once used it is not available to be dispatched in the market. We are concerned that due to the speed and quality of frequency response a battery can provide they will be at a severe disadvantage as a result of this mandatory requirement due to the lost opportunity of that stored energy that would have otherwise been available for use.

## **Primary frequency response requirements**

The CEC notes that the draft rule has elevated certain elements that were intended to be contained in the PFRR document into the rules such as the exemption principles and recognition in the rules that generators are not required to maintain headroom in order to provide PFR. The CEC supports this position as it will protect generators from future changes to the PFRR document that industry may not support.

We suggest the final rule contains further guidance material on what the AEMC and AEMO would consider 'excessive costs' for generator upgrades. Further, we are concerned with the decision to base the exemption criteria on the commercial position of the generator. It is difficult to understand how AEMO will be able to make judgement of the commercial position of a generator in order to justify whether an exemption is warranted.

It is important that the exemption thresholds are clearly understood by industry as upgrade costs may be significant. In consultation with CEC members, we have had reports of manageable upgrade costs in the range of \$10,000 and we have also had reports of potential upgrade costs approaching \$1,000,000 once purchase costs, installation, modelling and testing has been completed. Given this variance in upgrade costs, industry would benefit from further guidance from the AEMC and AEMO on what is deemed to be excessive, regardless of the generators commercial position.

The CEC supports the intention of the draft rule that complying with the mandatory PFR requirement would not mean changes to a generator's agreed technical performance standards.

## **Implementation**

The CEC recommends an enhancement to the tranching approach to implementing the mandatory PFR requirement. As proposed, there are two separate tranches of generators that will have the mandatory requirement applied to them at separate times – first those over 200MW and then those under 200MW. The CEC believes this is a sensible approach, however, we suggest that AEMO undertake analysis of frequency performance across the NEM following the rollout of the first of generators of greater than 200 MW. Such an approach will allow for an assessment of whether frequency performance has improved. If frequency materially improves to a level that AEMO is comfortable with and rolling out the secondary tranche is not going to produce significant improvements, then it may not be necessary to continue to rollout the PFR requirement across the remainder of the generation fleet. This would reduce overall system costs and reduce upgrade costs for smaller generators. This review would also inform the development of the incentive framework as the framework will require an understanding of the location and quantity of PFR that is appropriate for improving frequency quality within the NEM. We consider this review requirement should be in the NER.

Prior to the delay to the AEMO removal of disincentives to primary frequency response rule change request, the proposal included a change to the rules that stated a generator would not be allocated a share of the costs of regulation services, if it operates its plant in a frequency response mode in accordance with the settings in the Causer Pays procedure and

responds to arrest the frequency deviation<sup>1</sup>. We note this is no longer included with the mandatory PFR draft determination and assume this is due to the separation of the rule changes and the delayed rule change consideration. The CEC disagrees with this decision as it was a critical component to the rule change request. Generators who are not being rewarded for providing frequency response should at the very least not be allocated a share of causer pays factors as they are responding to arrest frequency deviations rather than contributing to them.

The draft rule includes a prohibition on any generators making modifications to their plant to meet the technical requirements prior to receiving AEMO's response and approval. The CEC does not support this element of the draft rule. We suggest this prohibition is removed and generators should be permitted to continue to modify their plant as they see fit as usual under the NER.

The CEC supports the AEMC's decision to only apply the mandatory requirement to generators that are dispatched above 0MW and subsequently the treatment of battery energy storage systems (BESS). Requiring BESS's to comply with the mandatory PFR requirement while idle or charging would be discriminatory and would also require the same requirements to be applied to other loads or generators when idle or consuming to ensure consistency.

### **Primary frequency control band**

The two mandatory PFR rule change requests from AEMO and Dr Sokolowski presented  $\pm 0.015\text{Hz}$  and  $\pm 0.025\text{Hz}$  respectively as the two options for generator deadband limits. The CEC suggested in our previous submission that the proposed deadband of  $\pm 0.025\text{Hz}$  by Dr Sokolowski is more reasonable as a tighter deadband may increase the wear and tear on generating units such as wind turbines as they work to control their active power output.

We note that the draft determination presents  $\pm 0.015\text{Hz}$  as the chosen deadband with limited justification for this choice compared to the alternative. Given our earlier feedback that the tighter deadband may contribute to greater wear and tear on their plant and that the draft determination provides no explanation for the selection of the  $\pm 0.015\text{Hz}$  band, we suggest the AEMC provide a fuller explanation to justify its decision in the final determination.

We note that individual plants will have the ability to adjust their deadband to a wider or tighter limit, provided AEMO agrees. The CEC supports this detail as it will allow generators to negotiate with AEMO on a more suitable deadband that reduces wear and tear on the generating unit.

### **Preliminary comments on the development of incentive framework**

The clean energy industry supported the Frequency Control Frameworks Review recommendations for the establishment of market-based options as the long-term PFR framework that will recognise the quality (speed and accuracy) that new technologies, such

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<sup>1</sup> AEMC, Primary frequency response rule changes, 19 September 2019, p70, available at [https://www.aemc.gov.au/sites/default/files/2019-09/Primary%20frequency%20response%20rule%20changes%20-%20Consultation%20paper%20-%20FOR%20PUBLI...\\_0.pdf](https://www.aemc.gov.au/sites/default/files/2019-09/Primary%20frequency%20response%20rule%20changes%20-%20Consultation%20paper%20-%20FOR%20PUBLI..._0.pdf)

as batteries, can provide as a PFR service.

The CEC suggests that the development of the incentive framework through the upcoming AEMC workplan presents the need for analysis that will assist with the permanent PFR market development. The level of frequency control needed from the generation fleet now and in the future should be quantified as it will provide the AEMC with guidance for the framework development and will assist AEMO to develop an understanding of the quantity and locational spread of PFR required. As mentioned above, tracking the rollout of the mandatory mechanism and its impact on frequency performance in the NEM would provide insights that would be useful to the market based PFR development.

It is also important to note that the incentive structure for PFR in the NEM should take into account the transitioning power system. For example, a market structure that is tailored to the frequency control that can be provided by the current generation mix in the NEM may not be fit for purpose in a future where the system is predominantly renewables. We suggest the incentive structure should be designed without bias so that it rewards those generators that are appropriately located and recognises the speed and quality of the PFR provided.