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31 October 2019

Mr Ben Hiron
Australian Energy Market Commission
PO Box A2449
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Reference: ERC0274

Dear Mr Hiron

Primary Frequency Response Rule Changes

Meridian Energy Australia Pty Ltd and Powershop Australia Pty Ltd (MEA Group or Powershop) thanks the Australian Energy Market Commission (AEMC) for the opportunity to provide comments on the AEMC's Primary Frequency Response Rule Changes Consultation Paper (the Paper).

Background on the MEA Group

MEA Group is a vertically integrated generator and retailer focused entirely on renewable generation. We opened our portfolio of generation assets with the Mt Millar Wind Farm in South Australia, followed by the Mt Mercer Wind Farm in Victoria. In early 2018 we acquired the Hume, Burrinjuck and Keepit hydroelectric power stations, further expanding our modes of generation. We have supplemented our asset portfolio by entering into a number of power purchase agreements with other renewable generators, and through this investment in new generation we have continued to support Australia's transition to renewable energy.

Powershop is an innovative retailer committed to providing low prices for customers and which recognises the benefits to customers in transitioning to a more distributed and renewable-based energy system. Over the last five years, Powershop has introduced a number of significant, innovative and customer-centric initiatives into the Victorian market, including the first mobile app that allows customers to monitor their usage, a peer-to-peer solar trading trial and a successful customer-led demand response program. Powershop has also been active in supporting community energy initiatives, including providing operational and market services for the community-owned Hepburn Wind Farm, supporting the Warburton hydro project, and working alongside our customers to fund a large range of community and social enterprise energy projects through our Your Community Energy program.

MEA Group recognises the significant degradation of primary frequency response (PFR) across the National Electricity Market (NEM) over recent years and agrees that action is required to ensure the system can continue to operate in a secure and resilient manner. We note that the events of 25 August 2018 resulted in the abrupt cessation of the work that was underway by the AEMC on the Frequency Control Frameworks Review (FCFR). This included a number of activities over both the short and long term that were to be completed by the Australian Energy Market Operator (AEMO).

Prior to the implementation of any rule change we believe these work streams should be completed with the outcomes and proposed remedies consulted on with industry. This work could include a voluntary mainland frequency trial aimed at identifying the most efficient outcome, including an attempt to determine the estimated amount of compensation required if a rule change were to be implemented.

MEA Group also note that the proposed rule changes potentially impact and disincentivise battery energy storage systems (BESS) entering the market and would require a cost/benefit test (i.e. the cost of operating a BESS could potentially be extremely high under the proposed rule changes and as a result would unlikely be the most economic outcome for the market).

Nevertheless, MEA Group believes there is a risk of missing a significant opportunity for the NEM to develop a market that incentivises the form of technology that will assist the improvement of frequency within the normal operating frequency band (NOFB). We encourage the AEMC to develop a rule change that does not create a barrier to entry for any particular future technology, including BESS, particularly where the long-term benefits to consumers and the market of such new technologies may exceed the benefits of a proposed rule change.

Please find below our responses to the questions raised in the Paper below.

QUESTION 1: ISSUES RAISED BY AEMO IN ITS RULE CHANGE REQUEST, MANDATORY PRIMARY FREQUENCY RESPONSE

In relation to AEMO's rule change request, Mandatory primary frequency response:

- What are stakeholders views on the issues raised by the AEMO in its rule change request, Mandatory primary frequency response?

As previously noted, MEA Group agrees that frequency performance during normal operation has deteriorated over recent years. Degradation is caused by the withdrawal of primary frequency response provided through active governor response by synchronous generation within the normal operating frequency band (NOFB), 49.85 Hz - 50.15 Hz.

- Do stakeholders agree with AEMO's assessment that regulatory change is required as a matter of urgency to restore effective frequency control in the NEM?

MEA Group agrees that frequency has been degrading within the NOFB for a prolonged period. Action should be taken to address the issue given the rapid transformation occurring across the power system, including the changing nature of generating systems connecting to the grid.

Significant weight is placed on the incident of 25 August 2018 (non-credible failure of Queensland New South Wales Interconnector due to lightning) in respect of the need for the rule changes. MEA Group does not believe it is clear that the proposed rule changes would have resulted in a different outcome in respect of this incident (i.e. would automatic under-frequency load shedding in NSW/Vic still have occurred if these rule changes had been in place prior to this event occurring). Notwithstanding this point we agree that more needs to be done in the short term to resolve the frequency degradation issue.

- What are stakeholders views on AEMO's definition of effective frequency control as requiring narrow band frequency response from as large a portion of the generation fleet as is practical?

MEA Group believes that the restoration of frequency response by generators within the NOFB is a practical and likely effective remedy to the frequency degradation issue. Our key concern is in respect of the application of the 'where reasonably practical to do so' test and at what cost to consumers. This point is addressed further in our submission.

- Are there any other related issues or concerns that stakeholders have in relation to frequency control during normal operation and following contingency events?

MEA Group has no further concern however, we note that these are two entirely separate issues and functions within the power system and should not be considered within the same context or addressed using the same service or product. Discussing these two aspects of the power system in the same consultation risks simplifying the issues or arriving at conclusions that are opaque or not clearly defined.

QUESTION 2: ISSUES RAISED BY DR SOKOLOWSKI IN HIS RULE CHANGE REQUEST, PRIMARY FREQUENCY RESPONSE REQUIREMENT

- What are stakeholders views on the issues raised by Dr Sokolowski in his rule change request, Primary frequency response requirement?

MEA Group is generally supportive of the findings made by Dr Sokolowski as well as the findings made by AEMO. With degradation of frequency response evident within the NOFB, we support the implementation of a framework that resolves the issue with an economically efficient outcome for consumers.

QUESTION 3: ISSUES RAISED BY AEMO IN ITS RULE CHANGE REQUEST, REMOVAL OF DISINCENTIVES TO PRIMARY FREQUENCY RESPONSE

- (a) What are stakeholders views on the issues raised by the AEMO in its rule change request, Removal of disincentives to primary frequency response?

MEA Group believes it is important for the proposed rule change to clarify in the National Electricity Rules (NER) that strict compliance with dispatch instructions should not take priority over provision of frequency response to help control system frequency. This issue has remained unresolved for some years, and therefore solving this issue for the regulators and all existing and future generators is important.

- (b) Are there any other related issues or disincentives in the NER to the provision of PFR, that the AEMC should consider?

Other than the potential to unnecessarily disadvantage investment in desirable technologies (e.g. BESS) we don't believe so.

QUESTION 4: CAPABILITY OF GENERATION PLANT AND THE IMPLEMENTATION PROCESS FOR AEMO'S PROPOSED MANDATORY PFR REQUIREMENT

In relation to AEMO's rule change request, Mandatory primary frequency response, and the draft PFRR:

- For stakeholders who own and operate scheduled or semi-scheduled generation plant: How easily can your plant meet the requirements of AEMO's draft PFRR? What, if any, adjustments or investments would need to be made and what are the expected costs?

MEA Group owns and operates non-scheduled, semi-scheduled and scheduled generators across three NEM jurisdictions. We have undertaken a high level review of our semi-scheduled (Mt Mercer Wind Farm) and scheduled (Hume Power Station) plant. With respect to the Mt Mercer Wind Farm, we believe some modifications will be required in order to facilitate the requirements set by AEMO in the Primary Frequency Response Requirements (PFRR) document.

At the Mt Mercer Wind Farm, we estimate hardware upgrades would be required to facilitate the PFR initiative along with some software changes. In addition, there would be significant modelling costs incurred to demonstrate compliance with the connection agreement.

In relation to the Hume Power Station, which is a scheduled generator first commissioned in 1958, our high level review indicates that significant changes are required to the existing configuration of the station – both electrically and mechanically – in order to allow it to operate in accordance with the requirements set out in the PFRR. We expect that for Hume to provide meaningful frequency response, a major governor upgrade (e.g. new governor hydraulics) would be required, which we would look at more closely as part of the self-assessment process if the rule change proposal is implemented.

- Do stakeholders consider the implementation time frames suggested by AEMO in its draft PFRR to be appropriate? In relation to AEMO's proposed self assessment process, is it appropriate for generators >200MW to provide AEMO with a self assessment within 60 business days and generators <200MW to provide AEMO with a self assessment within 120 business days?

MEA Group believes it is feasible to provide a self-assessment of the technical and commercial impacts of meeting the requirements set out in the PFRR for both the Mt Mercer and Hume Power Stations within 120 days, though justification for a 60 day timeframe for generators with installed capacity larger than 200MW is not clear.

- Do stakeholders consider there to be a more appropriate approach to coordinating the implementation of a PFR requirement across the generation fleet?

MEA Group supports the introduction of a voluntary trial as a first step to determine the estimated amount of compensation required. We believe the results of this voluntary trial will provide participants, AEMO and the AEMC with a clearer understanding of the estimated amount of compensation required if a rule change were to be implemented.

QUESTION 5: AEMO'S EXPECTED COSTS AND BENEFITS FOR ITS PROPOSED RULE, MANDATORY PRIMARY FREQUENCY RESPONSE

In relation to AEMO's proposed rule, Mandatory Primary frequency response :

- Do stakeholders agree with AEMO's characterisation of the costs and benefits associated with its proposed rule?

MEA Group supports some aspects of AEMO's characterisation of the costs associated with the implementation of the proposed rule change, such as the associated wear and tear on the installed equipment in order to comply with the rule change requirements. However, we believe the additional fuel costs associated with the implementation of such a rule change will be higher than AEMO has considered, particularly where a BESS is providing PFR in accordance with the proposed requirements.

We also expect that the regulation Frequency Control Ancillary Services (FCAS) markets, particularly the raise FCAS market will be significantly impacted by the introduction of the proposed rule change and that this will have a material impact on the commerciality of both existing and proposed generators, particularly BESS.

- What do stakeholders consider to be the immediate and ongoing costs of providing PFR and being compliant with the proposed rules?

MEA Group believes the immediate costs relate to the augmentation of the installed equipment in order to provide PFR. These costs are likely to be significant at the Hume Power Station and to a lesser extent at the Mt Mercer Wind Farm. Nevertheless, we note that as is the case with MEA Group's portfolio – some generators, such as Hume would be capable of providing the full range of services (if augmentation was to take place), whilst the semi-scheduled Mt Mercer Wind Farm would only be capable of providing a subset of the complete frequency provision services. Costs and benefits associated with the introduction of the rule change should be assessed accordingly.

- Is AEMO's proposed compensation arrangements for plant upgrades necessary and appropriate?

MEA Group believes that if the PFR Rule change were to be implemented, the associated costs for generators to comply with the requirements should be covered by AEMO and consumers, noting that consideration is provided to the full cost associated with the introduction of the rule change, including ongoing fuel costs as noted in this submission. We support a voluntary trial as an interim arrangement to appropriately inform all stakeholders of the true costs associated with this rule change.

- Do stakeholders consider the proposed rules to be a cost effective solution to the frequency control issues identified by the proponents?

MEA Group would expect that if the rule change was introduced, primary frequency within a very narrow band outside of the NOFB would improve considerably, though we are not convinced that this would immediately lead to a more resilient power system as is indicated by AEMO in its proposed rule change.

Even if this rule change was implemented and the frequency was kept closer to 50Hz within the NOFB, MEA Group suggests further evidence is required to support the argument that the double islanding event that occurred on 25 of August 2018 would have been prevented. It is not immediately apparent that "better" frequency stability would have resulted in a different outcome when that incident occurred which resulted in under frequency load shedding.

QUESTION 6: DR SOKOLOWSKI'S EXPECTED COSTS AND BENEFITS FOR HIS PROPOSED RULE, PRIMARY FREQUENCY RESPONSE REQUIREMENTS

In relation to Dr Sokolowski's proposed rule, Primary frequency response requirement:

- Do stakeholders agree with Dr Sokolowski's characterisation of the costs and benefits associated with his proposed rule?

MEA Group agree with some aspects of Dr Sokolowski's rule change request:

- the inefficient operation of generator and transmission networks;
- the potential for frequency measurement errors resulting in inefficient dispatch of energy and energy billing; and
- the increased risk of tripping interconnectors and islanding regions, if frequency continues to degrade at the rate it has over the past 5 to 10 years.

MEA Group broadly agrees with Dr Sokolowski's characterisation of the benefits associated with the proposed rule change request.

- What do stakeholders consider to be the immediate and ongoing costs of providing PFR and being compliant with the proposed rules?

MEA Group refers to its response at Question 5.

- Do stakeholders consider the proposed rules to be a cost-effective solution to the frequency control issues identified by the proponent?

MEA Group refers to its response at Question 5.

QUESTION 7: AEMO'S PROPOSED RULE, REMOVAL OF DISINCENTIVES TO PRIMARY FREQUENCY RESPONSE

Allocation of regulation service costs — causer pays

- Does AEMO's proposed rule adequately address stakeholder concerns in relation to the risks and rewards associated with the voluntary provision of PFR?

MEA Group generally supports the intent to remove any disincentive for a generator to operate in frequency response mode if it is not enabled for any of the FCAS services in accordance with the Market Ancillary Service Specification. Updating the causer pays mechanism to reflect these changes is also a necessary change to ensure the rules are aligned.

- Do stakeholders envisage any unintended consequences as a result of the proposed rule change?

It is not entirely clear on what the unintended consequences of the proposed rule changes might be or whom they might impact. We support the proposed exemption of some plant where the costs associated with compliance outweigh the benefits of participation.

However, it is unclear as to how the rule change may impact non-scheduled generators and whether or not their share of the causer pays costs would be materially impacted through the introduction of the rule change requests. MEA Group would support the introduction of a voluntary trial to allow all stakeholders to better understand the benefits, costs and consequences associated with the proposed rule changes.

Frequency response and compliance with dispatch instructions

- What are stakeholders views on AEMO's proposed changes to clauses 4.9.4 and 4.9.8 of the NER to address disincentives to PFR relating to compliance with dispatch instructions?

MEA Group are generally supportive of any proposal that removes the disincentive for a generator to provide primary frequency response.

Operating in frequency response mode

- What are stakeholders views on AEMO's proposed rule to address disincentives to PFR related to the requirements for FCAS provision?

MEA Group would expect that if this rule change were implemented then frequency operation within the NOFB would considerably improve. The extent to which the FCAS causer pays costs would reduce and whether this reduced cost would be proportional to the remaining generators, that would bear the causer pays costs, is not clear. Therefore, MEA Group would support some form of quantitative assessment to determine what impact this may have on those generators required to cover the cost of causer pays going forward.

QUESTION 8: AEMO'S EXPECTED COSTS AND BENEFITS ASSOCIATED WITH THE PROPOSED RULE, REMOVAL OF DISINCENTIVES TO PRIMARY FREQUENCY RESPONSE

In relation to AEMO's proposed rule, Removal of disincentives to primary frequency response:

- What are stakeholders' views on AEMO's estimate of the associated costs and benefits?

MEA Group does not agree with AEMO's assessment of the costs associated with the proposed rule change since they have neglected to include an additional cost which we believe is vital for a complete assessment of the proposed rule change.

If the proposed rule change ultimately disincentived some technologies to enter the generation fleet, this impact should be quantified as part of the assessment of the costs. For example, if the rule change resulted in material changes or impacts to the operation of a BESS in the NEM and those impacts meant that BESS were discouraged from entering the market in the future, then that would be a significant adverse cost that should be considered as part of this rule change proposal.

QUESTION 9: DR SOKOLOWSKI'S PROPOSED CHANGES TO ADDRESS DISINCENTIVES TO THE PROVISION OF PRIMARY FREQUENCY RESPONSE

In relation to Dr Sokolowski's proposed rule, Primary frequency response requirement:

- What are stakeholders' views on Dr Sokolowski's proposed changes to the NER to address disincentives to PFR?

MEA Group consider Dr Sokolowski's proposed changes are broadly in line with our views on AEMOs proposed changes.

- Do stakeholders envisage any unintended consequences as a result of the proposed rule change?

The issues outlined in our response to Question 7 should be considered.

QUESTION 10: AEMO'S RESPONSIBILITY TO MAINTAIN AND IMPROVE POWER SYSTEM SECURITY

In relation to Dr Sokolowski's proposed rule, Primary frequency response requirement:

- Do stakeholders consider there to be value in amending cl 4.3.1 to explicitly to refer to AEMO's responsibility to improve, in addition to maintain, power system security?

MEA Group agree with the intent of this section of Dr Sokolowski's rule change request.

QUESTION 11: INERTIA AND INERTIA SUPPORT ARRANGEMENTS IN THE NER

In relation to Dr Sokolowski's proposed rule, Primary frequency response requirement:

- Is the current chapter 10 definition of Inertia appropriate and fit for purpose?

MEA Group agrees that the Chapter 10 definition of inertia should be broadened to clarify that inertia support services may include fast frequency response from inverter-connected plant.

- Do the current arrangements for Inertia support activities adequately allow for Inertia support by way of fast frequency response from inverter connected plant?

MEA Group does not believe the current framework adequately allows for inertia support by way of fast frequency response from inverter connected plant.

- How could the arrangements for Inertia and inertia support activities in the NER be improved to better utilise the capabilities of inverter connected plant?

MEA Group has not had an opportunity to consider arrangements for inertia or inertia support activities in the NER beyond those proposed by Dr Sokolowski. We would encourage the AEMC to consider any alternative that encouraged the introduction of technologies into the market, with the capability to provide primary frequency response in a low cost and efficient manner.

QUESTION 12: ASSESSMENT FRAMEWORK

In relation to the AEMC's proposed assessment framework for the PFR rule changes:

- Do stakeholders consider that the assessment framework is adequate for considering the PFR rule change requests from AEMO and Dr Sokolowski?

MEA Group has no further comment on the proposed assessment framework considered by the AEMC other than to reiterate that any outcomes from this rule change request should be cognisant of the effect they may have on the future generation mix in the NEM.

QUESTION 13: TECHNICAL REQUIREMENTS OF EFFECTIVE PRIMARY FREQUENCY RESPONSE

In relation to the discussion of the technical requirements for effective frequency control and the policy options described in section 4.4:

- How do stakeholders view the ability of market or regulatory approaches to provide the necessary broad-based frequency response from participants?

MEA Group believes that sufficient capacity exists within the current market to provide the necessary frequency response required to restore frequency within the NOFB. The longer term challenge for the AEMC is to develop a framework that sufficiently encourages participants to provide the necessary frequency response within the NOFB.

- What issues are likely to arise with market or regulatory approaches in achieving the objective of a broad-based frequency response?

We have discussed the extent of the issues that we envisage will arise as a result of the introduction of the proposed rule changes previously in this submission.

QUESTION 14: TEMPORAL CONSIDERATIONS

In relation to the discussion of the temporal requirements for the development and implementation of a solution to deliver effective frequency control:

- How do stakeholders reconcile the need to address system security with the objective of minimising the long-term costs to consumers?

Restoring system frequency within the NOFB is an important issue and if left unresolved will likely lead to significant costs for consumers over the medium and longer term. MEA Group agrees the need is paramount and should not go unresolved any longer than is absolutely necessary.

- Do stakeholders consider the need to address system security in a timely manner as influencing the mechanism adopted to address the issue?

MEA Group believes there is sufficient capacity to implement a shorter term proposal such as a voluntary trial whilst the longer term framework can be adequately resolved and stakeholders appropriately consulted.

- Do stakeholders consider the process of implementing physical changes to generator governor controls as influencing the choice of mechanism?

Whilst it is possible that the implementation of physical changes to generator governor controls will influence the long term solution for frequency improvement, it is also fair to say that the current frequency degradation is a result of the –detuning of many of those governor settings (along with the retirement of a number of significant synchronous generators within the system) and so it is probably reasonable as a first step to seek to re-introduce those governor settings.

QUESTION 15: CONSIDERING THE COST BENEFIT TRADE-OFF FOR THE PROVISION OF PFR

In assessing the proposed rules for mandatory PFR, the Commission seeks stakeholder input on the following questions:

- What is the scale and cost of plant upgrades that would be required to meet different PFR performance requirements, including the performance specifications set out in AEMO's draft PFRR?

MEA Group expect this will vary dramatically between plant and technology. For instance there is a significant difference between the plant in MEA Groups' generation fleet largely due to the age and technology (hydro vs wind) of some plant but also due to their unique attributes. For example, those hydro generators that are the subject of water release instructions from operating authorities other than the owner of the plant will need to ascertain whether it is feasible to provide primary frequency response whilst ensuring they continue to meet the required water release as instructed by the relevant authority.

- How much of the fleet must provide narrow band PFR in order to be confident that the immediate system security needs are satisfied?

MEA Group believes the only way to accurately assess the answer to this question would be to instigate a voluntary trial and analyse the results and its effectiveness over time.

If you have any queries or would like to discuss any aspect of this submission please do not hesitate to contact me.

Yours sincerely,



Angus Holcombe
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Meridian Energy Australia

