



02 October 2017

Mr John Pierce  
Chairman  
Australian Energy Markets Commission  
PO Box A2449  
Sydney South NSW 1235

Dear Mr Pierce

### **RE: ERC0208 Inertia Ancillary Service Market – Consultation Paper**

ERM Power Limited (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Rule Change Request – Inertia Ancillary Service Market – Consultation Paper (the Paper).

### **About ERM Power Limited**

ERM Power is an Australian energy company operating electricity sales, generation and energy solutions businesses. The Company has grown to become the second largest electricity provider to commercial businesses and industrials in Australia by load<sup>1</sup> with operations in every state and the Australian Capital Territory. A growing range of energy solutions products and services are being delivered, including lighting and energy efficiency software and data analytics, to the Company's existing and new customer base. ERM Power also sells electricity in several markets in the United States. The Company operates 497 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland.

[www.ermpower.com.au](http://www.ermpower.com.au)

### **General comments**

ERM Power supports the AEMC's view that development of a market based mechanism to obtain and pay for additional quantities of inertia (market inertia services) in addition to the minimum levels of inertia obligations placed on Transmission Network Service Providers (TNSP) in the recent Managing the Rate of Change of Power System Frequency (Rule 2017 No.9) may deliver market benefits to consumers.

We also support the potential substitution of synchronous inertia, inertia provided by synchronous generating units, with synthetic inertia provided via control system action from asynchronous power equipment, to provide this market inertia service where AEMO certifies it is technically feasible to do so, provided this results in lower economic costs to consumers.

In supporting a market based mechanism, we believe this could potentially be provided by:

- 1) A close to real time market similar to the current provision for fast start generators, or
- 2) A Network Support and Control Ancillary Service (NSCAS) procured via longer dated tender and dispatched on a day-ahead basis on a markets benefit-cost basis by AEMO.

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<sup>1</sup> Based on ERM Power analysis of latest published financial information.

We do not believe it is possible to procure and dispatch market inertia services on a real time “dispatch interval” basis similar to how Frequency Control Ancillary Services (FCAS) are currently procured and dispatched for the reasons set out below.

### **Real time vs tender based procurement**

In assessing the best market design for the procurement of market inertia, the AEMC needs to consider that the provision of synchronous inertia tends to be digital and lumpy in nature. If a synchronous generating unit is in-service then the unit is providing full inertia capability, while if the unit is out of service, inertia is not provided. The actual level of inertia provided by a synchronous generating unit is also independent of unit real power (MW) output. The unit does not trade-off the provision of inertia with real power output in the same way as marginal decisions between the provision of real power output and the provision of FCAS for an in-service unit can be optimised. The only decision is via the “digital” unit commitment or de-commitment decision which is not a “dispatch interval” based marginal decision.

Depending on real time market design, in assessing a unit commitment or de-commitment decision, analysis may need to be based on the potential value of market inertia following the implementation of the decision, rather than the current price outcomes. If a unit is “committed” into service, the lumpy nature of synchronous inertia would potentially fully relieve the rate of change of frequency (RoCoF) constraint on the interconnector flows to the benefit of consumers. However, in doing so, this also potentially reduces the market inertia services price to zero. In this circumstance, unless a clear benefit in energy price/volume trade-off outcomes was observed, the generating unit would not commit as from the generator’s perspective this would result in a sub optimal outcome and the RoCoF constraint would remain active to the economic detriment of consumers.

For these reasons we do not believe a “dispatch interval” based real-time market similar to the FCAS markets is technically achievable for the provision of the market inertia service.

Alternatively, a close to real time market design could be based on the current value of provision of the market inertia services; however, it would also need to inform the length of time that this price would apply, to allow accurate analysis by the synchronous generators into unit commitment or de-commitment decisions. From this perspective, it would be beneficial if the close to real time market design allowed providers of market inertia to bid the following parameters:

1. a firm price for the provision of the service, for a specified time period,
2. a minimum notice time to provide the service,
3. a minimum time of provision for the supply of the service, and
4. a maximum time provision for supply of the service.

This is very similar to the commitment decision parameters for fast start generators and would allow certainty for both the provider(s) and procurer (AEMO) of the service, and allow the service to be procured on a marginal cost vs benefit assessment basis.

Where AEMO determines that substitution of synchronous inertia with synthetic inertia is technically achievable, the same bidding parameters would apply to the provision of synthetic inertia. In this case, potential exists that the notice time to supply the service and the minimum supply time may be short, in which case a short notice RoCoF constraint could be mitigated.

However, the maximum time capability for the provision of the service from a synthetic inertia provider may not allow the ongoing supply of the service for the full duration that the RoCoF constraint is forecast to be binding, and other service providers may also need to be dispatched. The provision of market inertia services via the use of synthetic inertia may also result in the reduction in supply of real power output and/or FCAS by the synthetic inertia provider.

Also, in the case of intermittent renewable generation, the provision of synthetic inertia would be dependent on the availability of wind and solar energy input and in the case of batteries, the current state of charge and operating mode. The synthetic inertia would be by its nature be intermittent as opposed to firm.

A significant disadvantage of a close to real time market that needs to be considered by the AEMC is that it provides no long-term price signal for the provision of market inertia services. This results in a risk to the potential detriment of consumers that the required supply of market inertia services simply does not exist when required to mitigate the impact of RoCoF constraints.

A viable potential alternative to a close to real time market is provision of the market inertia service via a mechanism similar to the supply of NSCAS. In this case AEMO would tender for “availability” for supply of market inertia services over a specified contract period, at a pre-negotiated cost, to be dispatched by AEMO on a day-ahead basis, or potentially with shorter notice, with the agreement of the service provider(s). This would ensure that providers of the market inertia service actually exist to supply the service when required to do so. In addition to the four bid parameters for the close to real time market, potential suppliers would also supply “availability” pricing to AEMO as part of the tendering process.

If the AEMC determined that provision of firmer market inertia services could be procured via a NSCAS procurement type arrangement, consideration should also be given to penalties for non- supply of services when dispatched by AEMO, this could be in the form of contracted suppliers paying the full cost of dispatch of an alternative service procured by AEMO.

### **Benefits of the proposed rule change**

ERM Power agrees with the AEMC’s view that in the future low levels of the provision of synchronous inertia may manifest as RoCoF constraints on interconnector flows. This will result in consumers in the importing region incurring a higher Regional Reference Price (RRP) than would otherwise be the case had the interconnector been capable of achieving its maximum unconstrained flow. This RoCoF constraint could be mitigated or completely removed by the provision of additional market inertia services which would provide tangible short- and long-term economic benefit to consumers.

Consumers in an electrical sub-region not aligned with the boundary of one of the current National Electricity Market (NEM) regions also benefit from an increase in power system security and reliability of supply during any “islanding” event by the dispatch of market inertia services. Whilst the provision of market inertia services in this case may not necessarily increase flows across an interconnector, benefits still accrue to consumers within the impacted region.

For these reasons we believe that consumers are the primary beneficiary of the dispatch of market inertia services and as such, the costs of dispatch of market inertia services should be recovered from consumers.

### **Cost recovery of market inertia services**

ERM Power does not support the use of interconnector settlement residues to fund market inertia services costs. Whilst the proposed shadow pricing methodology can accurately provide the marginal price signal, funding the costs of market inertia services using interconnector residues in effect provides no tangible benefit to the holder of a settlement residue auction unit and imposes little if any costs on the primary beneficiaries.

In fact, the proposed cost recovery methodology significantly reduces the value of the interconnector settlement residues. This will flow through to the bids for units at future settlement residue auctions and reduce the amount of offset to consumers for transmission use of system charges (TUOS).

As set out above, the primary beneficiary of the dispatch of market inertia services are consumers. We believe the most accurate way from an economic efficiency perspective to capture the value of this benefit is for cost recovery to occur from the proceeds of the settlement residue auctions currently paid to TNSPs. In that way consumers directly pay for the benefit received for the dispatch of market inertia services.

The benefits to consumers would include both the benefit of a lower RRP in the importing region and the increased value received during the interconnector settlement residue auction process for the sale of interconnector settlement residue units that will be firmer in nature due to the dispatch of market inertia services than would otherwise be the case. If a shortfall were to occur between the cost of the market inertia services and the proceeds of the settlement residue auctions we support continued cost recovery from TNSPs which could result in cost recovery from future settlement residue auctions or an incremental increase in TUOS charges. We would not support any proposal to cap and scale back payments to market inertia service provider's post-dispatch of market inertia services as this would result in the use of a service at less than its efficient cost.

Recovery of costs via the settlement residue auctions proceeds would also allow implementation of the proposed market arrangements in a timely manner as this would not significantly impact the value of already auctioned interconnector settlement residue units. The alternative of cost recovery from the interconnector settlement residue themselves would potentially result in a significant negative impact of the holders of already auctioned interconnector settlement residue units.

## **Conclusion**

ERM Power supports the AEMC's view that development of a market based mechanism to obtain and pay for additional quantities of inertia (market inertia). We currently do not believe it is possible to procure and dispatch market inertia services on a real time "dispatch interval" basis similar to how Frequency Control Ancillary Services (FCAS) are currently procured and dispatched. We believe the AEMC needs to consider either a close to real time or longer term contract via tender type provision, similar to how NSCAS is procured and dispatched. ERM Power supports cost recovery for market inertia services from consumers via the settlement residue auction proceeds as consumers are the primary beneficiary of these services.

Please contact me if you would like to discuss this submission further.

Yours sincerely,

[signed]

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