



24 April 2018

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

Dear Mr Pierce

RE: ERR0059 Frequency Control Frameworks Review – Draft Report

ERM Power Limited (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Frequency Control Frameworks Review Draft Report (the Report).

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 load¹ 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

General comments

ERM Power supports the AEMC's view that provision of frequency control services should be via market based incentives as opposed to the use of mandatory obligations on service providers. We also support the view that greater transparency via the implementation of improved reporting requirements in the National Electricity Rules by the Australian Energy Market Operator (AEMO) and the Australian Energy Regulator (AER) of both actual frequency outcomes and Frequency Control Ancillary Services (FCAS) markets outcomes.

However, we are concerned that the AEMC has stressed the need for the requirement of Primary Frequency Response via changes to governor action and control systems response within the boundaries of the system Frequency Normal Operating Band (FNOB). We believe this view by the AEMC is premature as to date no trials by AEMO of changes to the enablement of Regulation FCAS or adjustments to control settings within AEMO's Automatic Generator Controls (AGC) system have been initiated. Trials of changes to the enablement of Regulation FCAS and review of AEMO's AGC system were contained within the majority of submissions to the Issues paper. ERM Power believes these trials should be undertaken prior to forming a firm view of the need for the use of Primary Frequency Response within the boundaries of the FNOB.

¹ Based on ERM Power analysis of latest published financial information.

The need for Primary Frequency Response vs changes to the enablement of regulation FCAS or adjustments to AEMO's AGC system

At the time of changes to the system FNOB and the approval for NEMMCo, based on potential economic benefits, to commence a staged reduction in the enablement of regulation FCAS services in September 2001, protocols were put in place between the National Electricity Market Management Company (NEMMCo), the National Electricity Code Administrator (NECA) and the Reliability Panel. At that time regulation FCAS had a fixed enablement of 300 MW of raise and lower services.

These protocols for the process governing the reduction of the regulation FCAS enablement amount had as one of their primary requirements that “the processes established will need to be auditable, transparent and repeatable so that all parameters can be reviewed on a regular basis to take account of changes in market dynamics”.²

In particular, NEMMCo prepared and issued routine monthly reports on system frequency outcomes to ensure that frequency outcomes remained well within the FNOB as regulation FCAS enablement was reduced. In the event that system frequency moved towards the boundaries of the FNOB, NEMMCo was to increase the enablement of regulation FCAS to ensure that system frequency remained well within the FNOB.

These protocols were reviewed and re-confirmed during NEMMCo's 2007 FCAS Market Review, in particular NEMMCo argued strongly at the time that setting the regulation FCAS enablement amount should continue to be based solely on NEMMCo's ongoing monthly monitoring of system frequency outcomes,³ as opposed to a more rigorous calculation methodology which was suggested by the National Generators Forum and market participants. In assessing the requirements for review of the regulation FCAS enablement amount, NEMMCo considered that the criteria set out in Appendix 3 to the Final Report would fulfil their obligation in this regards. We note that in this regard NEMMCo indicated that “Should the system frequency repeatedly stray outside the limits (c) or (d), then NEMMCo will increase the regulation FCAS requirements to ensure that the power system does not breach the frequency standards,” where:

(c) the system frequency breaches a band of 49.8 – 50.2 Hz in the absence of a contingency event or load event; or

(d) the system frequency strays outside a band of 49.85 – 50.15 Hz for more than 0.5% of the time over any 30 day period, or for more than three minutes on any occasion, in the absence of a contingency event or load event.

It is also worth noting that prior to this Review in June 2006 NEMMCo introduced a “time of day” variable regulation FCAS enablement process which increased the raise service enablement amount to 250 MW during periods of known system demand ramping.⁴

It is unclear as to why these agreed protocols have not been adhered to over the intervening period. ERM Power believes that had the agreed protocols been adhered to and the variable “time of day” raise service enablement amount remained in place, the observed change in system frequency outcomes would have been less pronounced compared to those currently observed and potentially may not have occurred at all. We also believe that system frequency outcomes would benefit from implementation of dynamically-calculated regulation FCAS enablement amounts based on current system frequency outcomes as opposed to the current process of a static enablement amount.

² Attachment 2 – NECA Reliability Panel Frequency Operating Standards September 2001

³ Section 3.3 – NEMMCo FCAS Review Final Report July 2007

⁴ NEMMCO Communication No. 2164 issued on 16 June 2006

We urge the AEMC to give consideration to the requirement for AEMO to reinstate these agreed protocols and allow the results from reasonable trial periods to be assessed prior to any rule change process for the implementation of a Primary Frequency Response market or amendments to the process for the provision of regulation FCAS.

Primary Frequency Response Market or amendments to the provision of regulation FCAS

We agree with the AEMC's view that following trials of changes to AEMO's process for determining regulation FCAS enablement amounts, if it is determined that primary frequency response is still required, then this should be introduced via a Market process as opposed to mandated provision by generators.

In assessing the options contained in section 5.3.2 of the Report, ERM Power supports Option E - Development of new markets for primary regulating response and headroom. Whilst Option A - Provision of a primary regulating response with regulation FCAS and Option F - Introduction of incentive payments for primary regulating response through changes to causer pays both have the appeal of offering a "quick fix" both have the potential to introduce unintended consequences for the regulation FCAS markets via the appropriation of the provision of "free services" by AEMO muting the signal for the provision of these services.

Both Options A and F would rely on the setting of pricing outcomes in the regulation FCAS market to provide the signal for the provision of the service, but due to the required adjustments to governors and control systems to provide the required service, the service would continue to be supplied even when generators were not enabled for the provision of the service. With an apparent improvement in system frequency outcomes regulation FCAS enablement amounts could then be reduced without impacting system frequency outcomes. This would have negative consequences for the provision of the required service.

If it is believed a "quick fix" needs to be implemented as a transitional solution pending implementation of Option E, then Option F may offer the easiest option. However, this will also require that:

1. The provision of any primary frequency response also be considered as the provision of regulation FCAS response by a generating unit;
2. Generating units enabled for regulation FCAS must be paid for the provision of services exceeding their enablement amount; and
3. AEMO being required to set and maintain the regulation FCAS enablement amount at a fixed value based on the sum of the primary frequency response requirement and a minimum regulation FCAS enablement amount to ensure an accurate price signal for provision of the required services is maintained.

Frequency monitoring and reporting

ERM Powers strongly supports the provision of detailed reports on the performance of frequency control and regulation FCAS in the NEM. We also believe that this would be best achieved via changes to the Rules to ensure in the future these reporting obligations are not overlooked. We believe at a minimum these details should be provided to the Market on at least a quarterly basis.

In the first instance, rather than setting out the actual reporting requirements in the Rules, we believe the Rules should require that the Reliability Panel to consult on and issue guidelines as to what frequency and regulation FCAS reporting statistics should be published in these quarterly reports. We believe the Reliability Panel, who are responsible for setting the Frequency Standards in consultation with interested parties, is best placed to determine what reporting requirements should be met and which NEM body should be responsible for provision of these detailed reporting requirements.



We have included some stylised examples of reports we believe would be of benefit to the industry in Attachment 1 to this submission.

Review of AEMO's Regulation FCAS causer pays procedure

ERM Power supports the investigation of whether causer pays contribution factors could be aligned with the period over which costs are incurred and that AEMO should clarify more details about the procedure.

Classification of small generating units as ancillary service generating units

ERM Power would support a rule change to allow reclassification of small generating units as ancillary service generating units for the purposes of offering market ancillary services where these units meet the requirements of the Market Ancillary Services Specification (MASS). We do not however support major technical changes to the MASS on the basis of reducing the technical provision of FCAS merely to allow small generating units to register as ancillary service generating units. The technical obligations should remain consistent irrespective of generating unit size.

Future FCAS frameworks

ERM Power supports the planned approach being recommended for the consideration of new technologies and services as set out in section 8 of the Report.

Conclusion

ERM Power supports the approach taken by the AEMC during the current Review and supports many of the draft recommendations contained in the Report. However, we remained concerned by the apparent haste to implement requirements for the provision of primary frequency response in preference to requiring AEMO to implement trials of changes to regulation FCAS enablement amounts and adjustments to AEMO's AGC system. While preparatory work could proceed on the provision of primary frequency response, this should only proceed to implementation following completion of these trials where it is shown the need for primary frequency response has actually been demonstrated.

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

Yours sincerely,

[signed]

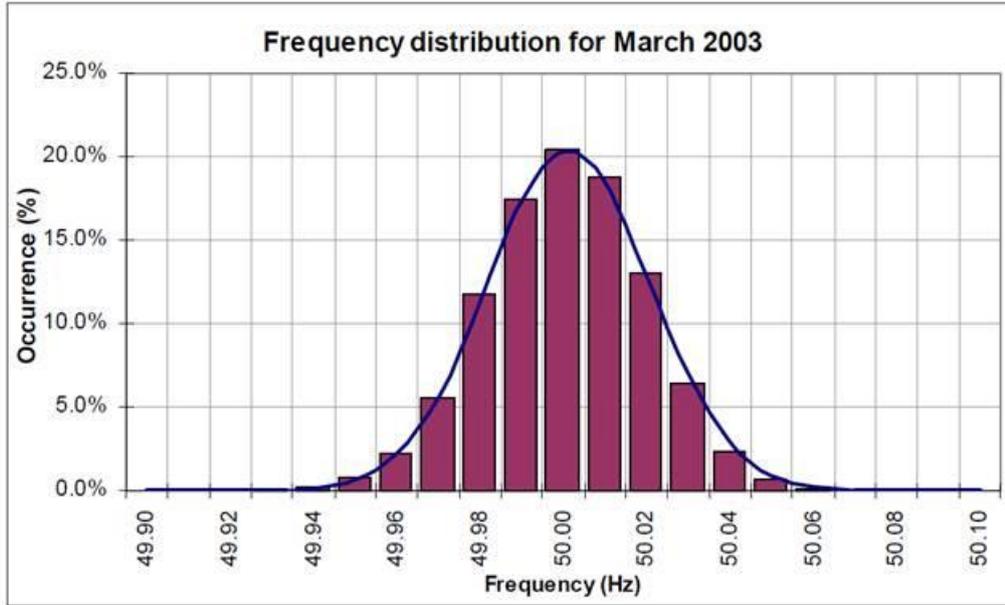
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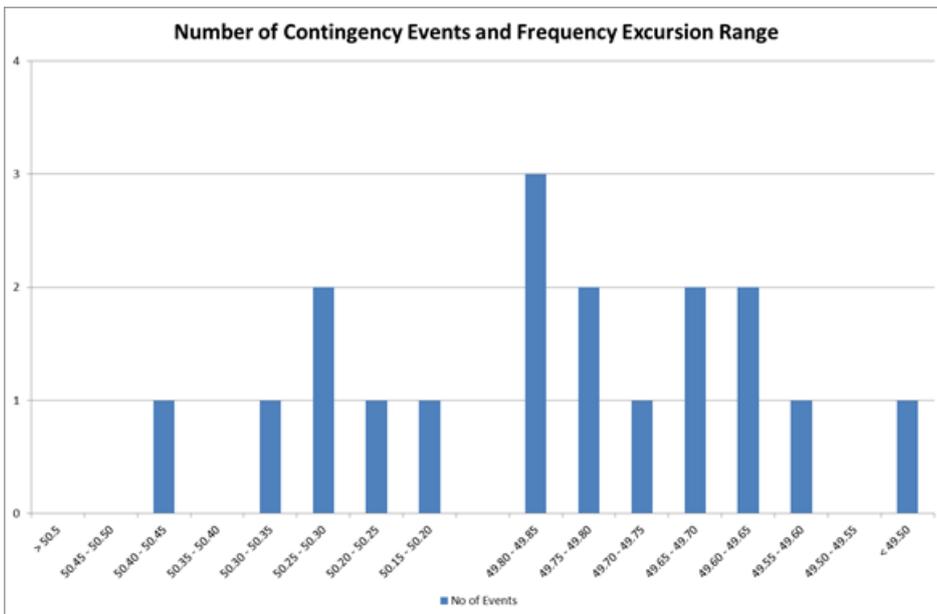
Stylised Examples of Frequency Control Reporting Requirements

Frequency Distribution Graph

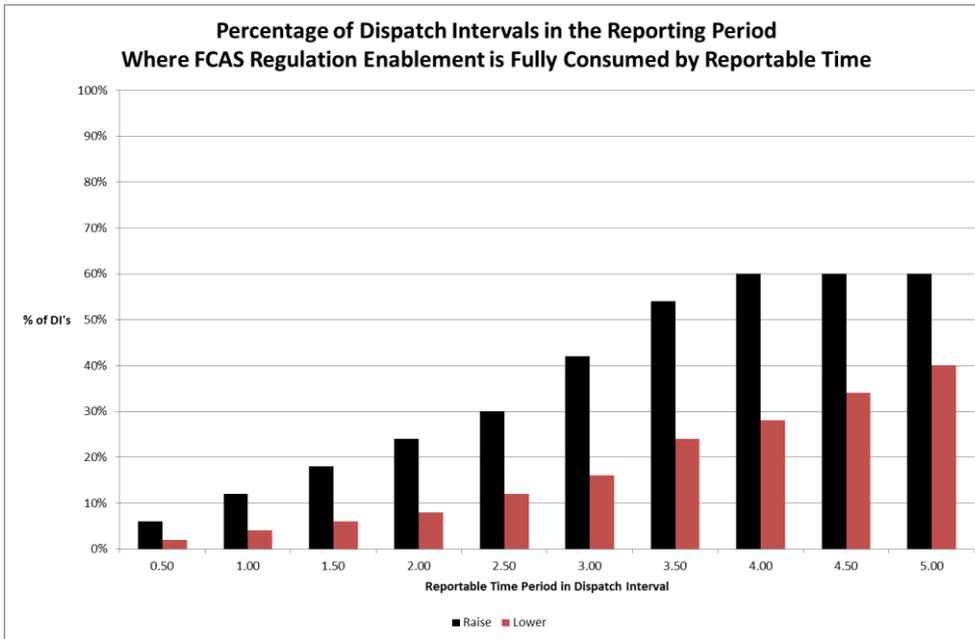
As per original NEMCO's report



Number of Contingency Events within a Frequency Excursion Range



Regulation FCAS Consumption



Frequency Events Duration Report

As per original NEMMCo report

2.1 Low Frequency Events: Generation

There were two generation events event during April 2003 that caused the frequency to fall below 49.85 Hz.

Table 2: Generating Unit Trips Resulting In Frequencies Below 49.85 Hz (April 2003)

Date	Event	Min. Freq (Hz)	Below 49.85 for
20:35 Hr on 09 April	Millmerran U2 trip from 435 MW	49.825	7 s
13:49 Hr on 14 April	Vales Point U6 trip from 498 MW	49.823	12 s

2.2 Low Frequency Events: Multiple Contingency

There was one multiple contingency event during April 2003 that caused the frequency to fall below 49.85 Hz.

Table 3: Multiple Contingency Events Resulting In Frequencies Below 49.85 Hz (April 2003)

Date	Event	Min. Freq (Hz)	Below 49.85 for
05:53 Hr on 30 April	Millmerran U1 trip from 426 MW Millmerran U2 trip from 369 MW	49.745	292 s

The frequency remained within the frequency operating standards for each of the generating unit trips listed above.

2.3 High Frequency Events

There were no events during April 2003 that caused the frequency to rise above 50.15 Hz.