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AEMC 2009, *Ramp Rates, Market Ancillary Service Offers, and Dispatch Inflexibility*, Rule Determination, 15 January 2009, Sydney

## **About the AEMC**

The Council of Australian Governments, through its Ministerial Council on Energy, established the Australian Energy Market Commission (AEMC) in July 2005 to be the Rule maker for national energy markets. The AEMC is currently responsible for Rules and policy advice covering the National Electricity Market. It is a statutory authority. Our key responsibilities are to consider Rule change proposals, conduct energy market reviews and provide policy advice to the Ministerial Council as requested, or on AEMC initiative.

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## Abbreviations

AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
Commission	see AEMC
MCE	Ministerial Council on Energy
NEL	National Electricity Law
NEM	National Electricity Market
NEMDE	NEM Dispatch Engine
NEMMCO	National Electricity Market Management Company
Regulations	National Electricity (South Australia) Regulations
Rules	National Electricity Rules
VoLL	Value of lost load

# Summary

## Summary of the Rule change proposal

On 21 April 2008, the Australian Energy Regulator (AER) submitted a Rule change proposal relating to bidding and rebidding of ramp rates, market ancillary service offers, and dispatch inflexibility. The AER contends that the Rules currently permit generators to rebid technical parameters such as ramp rates, market ancillary service offers, and dispatch inflexibility in such a way to inhibit the National Electricity Market Management Co. Ltd's (NEMMCO's) ability to reduce the output of generators through central dispatch to manage system security. The proposal, in part, followed an investigation into the events of 31 October 2005 when the failure of a major transmission line in New South Wales caused significant disruption of the market.

The AER's Rule change proposal consists of the following three core components that would require relevant scheduled generators and market participants to:

1. provide a ramp rate that is:
  - greater than a minimum ramp rate of 3 MW/minute except where it can be demonstrated to NEMMCO that a lower ramp rate is required for technical or safety reasons, and
  - no more than the maximum ramp rate that an item of equipment is capable of achieving in normal circumstances.
2. provide market ancillary service parameters for generators that reflect the technical capability of the generator's plant; and
3. declare themselves "inflexible" only when plant technical constraints justify such a declaration.

## Consultation

Eight first round submissions were received on this Rule change proposal, all generally supporting the intent of the proposal, but suggesting some improvements to the proposed Rule change. The Australian Energy Market Commission (Commission) accepted some of these changes in its draft determination where it considered these changes would further promote the National Electricity Objective (NEO).

Four second round submissions were received on the draft Rule determination and the draft Rule suggesting further improvements. Snowy Hydro, AGL and Hydro Tasmania also made a joint presentation to the AEMC.

The Commission has reviewed its draft Rule determination and amended the draft Rule in response to the issues raised. The Commission considers these changes do not alter the core components of the proposed Rule as set out above.

## **The Commission's decision**

The Commission makes this Rule determination and the attached Rule on the AER's 'Ramp Rates, Market Ancillary Service Offers, and Dispatch Inflexibility' Rule change proposal, in accordance with Section 102 and 103 of the National Electricity Law (NEL).

The Commission is satisfied that the Rule will or is likely to contribute to the achievement of the national electricity objective (NEO). The Rule would require that the technical parameters in relation to ramp rates, market ancillary service offers and dispatch inflexibility reflect technical capability of plant allowing NEMMCO to manage system security issues more effectively. This would improve the reliability and security of the national power system, and improve the efficiency of the operation of the National Electricity Market (NEM). For these reasons, the Commission considers that the Rule making test under section 88 of the NEL is satisfied.

## **Rule Commencement**

This Rule is scheduled to commence on 31 March 2009.

# 1 The AER's Rule proposal

## 1.1 Summary of the AER's Rule proposal

On 21 April 2008, the AER submitted a Rule change proposal relating to the ability of relevant scheduled generators and market participants to bid and rebid technical parameters, including ramp rates, market ancillary service offers, and dispatch inflexibility profiles, in pursuit of commercial objectives when power system security could be compromised.

The proposal was precipitated by an AER investigation of the events of 31 October 2005<sup>1</sup>. On that day, NEMMCO invoked network constraints to manage the impact of a transmission outage, which had the effect of constraining the dispatch of some generation in the vicinity. The AER found that some generators took action to minimise the commercial impact of these constraints by rebidding their ramp rates to very low levels. This limited the rate that NEMMCO was able to reduce the dispatch levels of those generators, thus hindering NEMMCO's ability to effectively manage power system security during that event.

The AER also cites examples where generators have rebid market ancillary service offers or dispatch inflexibility profiles to limit the rate at which their dispatch targets can be reduced in response to binding network constraints.

The Rules currently permit generators to rebid their ramp rates, market ancillary service offers and dispatch inflexibility profiles at any time up until dispatch. Rebids must be made in good faith and must be accompanied by a reason for the rebid. No other restrictions apply.

The AER contends that the intent of the Rules is for these technical parameters to reflect the technical capability of a generator's plant. However, the Rules do not make this explicit. As a result, the AER believes that some generators may have bid or rebid ramp rates, market ancillary services offers and dispatch flexibility for commercial reasons.

The AER's Rule change proposal seeks to limit the ability of relevant scheduled generators and market participants to bid and rebid technical parameters in pursuit of commercial objectives in the following three areas:

### 1. Ramp Rates

The AER's Rule change proposal imposes a minimum ramp rate of 3 MW/minute except where it can be demonstrated to NEMMCO that a lower ramp rate is required for technical or safety reasons. NEMMCO has advised the AER that a ramp rate of 3 MW/minute is sufficient to allow NEMMCO to manage system security incidents. In addition, the AER Rule change proposal limits the maximum ramp rate to that

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<sup>1</sup> The events of 31 October 2005, Investigation Report, Australian Energy Regulator, October 2006.

provided by the relevant scheduled generator and market participant as its generating unit data. For consistency, the AER proposed that this change cover all participants to whom obligations regarding ramp rates apply.

## **2. Market Ancillary Service<sup>2</sup> Offers**

Due to a limitation in the NEM Dispatch Engine, generators can rebid market ancillary service offers in such a way as to “trap” the dispatch level of their units at close to maximum capacity.

To address this problem, the AER has proposed a Rule amendment that would require the market ancillary service parameters bid by generators to reflect the technical capability of the generator’s plant.

## **3. Dispatch Inflexibility**

The Rules explicitly require generators to notify NEMMCO of dispatch inflexibility due to abnormal plant or operating conditions as soon as the generator becomes aware of such conditions, but the Rules do not explicitly prohibit use of dispatch inflexibility for other purposes such as the pursuit of commercial objectives. The AER’s investigations identified instances where generators appeared to have used dispatch inflexibility to limit the rate at which their dispatch levels can be reduced under binding network constraints following a system security incident.

To address this problem, the AER has proposed a Rule amendment that would permit generators to declare themselves “inflexible” only when plant technical constraints justify such a declaration.

## **New Civil Penalty Provisions**

In its Rule change proposal, the AER noted that it intends for the following new proposed clauses to be civil penalty provisions:

- (a) clause 3.8.3A(b),
- (b) clause 3.8.3A(d),
- (c) clause 3.8.3A(j),
- (d) clause 3.8.7A (l), and
- (e) clause 3.8.7A(m).

The AER also sought to amend the following existing civil penalty provisions:

- (a) clause 3.8.4,
- (b) clause 3.8.19,

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<sup>2</sup> Commonly referred to as frequency control ancillary services (FCAS)



(c) clause 3.8.22 ,and

(d) clause 3.8.22A.

## **1.2 First round consultation**

On 22 May 2008, under section 94 of the NEL, the Commission decided to commence initial consultation on the AER Rule change proposal by publishing a notice under section 95 of the NEL.

Submissions closed on 19 June 2008.

On 28 August 2008, the Commission published a notice under section 107 of the National Electricity Law (NEL), which extended the period for publication of the draft Rule determination for this proposal. The Commission undertook to publish its draft Rule determination by 30 October 2008.

Eight first round submissions were received on this Rule change proposal, all generally supportive of the intent of the proposal, but suggesting some improvements to the proposed Rule change. The Commission's response to comments raised in submissions is set out at Appendix A.

One supplementary submission was received from Snowy Hydro, which was late for consideration as part of the draft determination and the draft Rule.

All submissions are available on the AEMC's website<sup>3</sup>.

## **1.3 Second round consultation**

On 23 October 2008, the Commission gave notice under section 99 of the NEL of the making of the draft Rule determination and the draft Rule.

The draft Rule determination and the draft Rule were open for public consultation for six weeks. Submissions closed on 5 December 2008.

Four second round submissions were received. Snowy Hydro provided its comments from its supplementary submission in a joint submission with AGL and Hydro Tasmania. Snowy Hydro, AGL and Hydro Tasmania also made a joint presentation to the AEMC.

Submissions and a copy of the presentation are available on the AEMC website. The Commission's response to comments raised in submissions is set out at Appendix A.

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<sup>3</sup> Submissions are located at <http://www.aemc.gov.au/electricity.php?r=20080522.124522>

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## **2 The Commission's Final Rule Determination**

The Commission has determined in accordance with sections 102 and 103 of the NEL to make this final Rule determination and the final Rule.

This final Rule determination sets out the Commission's reasons for making the final Rule. The Commission has taken into account:

- The Commission's powers under the NEL to make the Rule;
- Any relevant Ministerial Council on Energy (MCE) statements of policy principles;
- First round stakeholder submissions;
- Second round stakeholders submissions (and a presentation); and
- The Commission's analysis as to the ways in which the Rule will or is likely to contribute to the achievement of the National Electricity Objective (NEO) so that it satisfies the statutory Rule making test.

### **2.1 The Commission's power to make the Rule**

The subject matters about which the AEMC may make Rules are set out in Section 34 of the Rules and more specifically in Schedule 1 to the NEL.

The proposed Rule falls within the subject matters that the AEMC may make Rules about as it relates to the regulation of:

- The NEM (as it relates to how NEMMCO manages central dispatch);
- The operation of the national electricity system for the purposes of the safety, security and reliability of that system (as it relates to the ability of NEMMCO to maintain power system security); and
- The activities of persons participating in the NEM (as it relates to the Rules of how market participants provide NEMMCO with parameters related to ramp rates and frequency control ancillary services, and circumstances in which a market participant may declare itself inflexible).

The Commission is satisfied that the AER's proposed Rule change is a subject matter about which the Commission may make a Rule.

### **2.2 Relevant MCE statements of policy principles**

The NEL requires the Commission to have regard to any relevant MCE statement of policy principles in applying the Rule making test. The Commission notes that currently there are no MCE statement of policy principles that relate to the issues contained in the AER's Rule change proposal.

## 2.3 The Rule making test

The NEO is the basis of assessment under the Rule making test and is set out in Section 7 of the NEL:

“The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.”

The Rule making test states:

“(1) The AEMC may only make a Rule if it is satisfied that the Rule will or is likely to contribute to the achievement of the national electricity objective;

(2) For the purposes of subsection (1), the AEMC may give such weight to any aspect of the national electricity objective as it considers appropriate in all circumstances having regard to any relevant MCE statement of policy principles”.<sup>4</sup>

Under Section 91A of the NEL, the Commission is also able to make a “more preferable Rule”, if the Commission is satisfied that, having regard to the issue or issues raised by the proposed Rule, the more preferable Rule will or is likely to better contribute to the achievement of the NEO. The Commission’s power to make a “more preferable Rule” commenced operation on 1 January 2008, following amendments to the NEL.

This section presents the Commission’s assessment of the extent to which the Rule promotes the NEO and satisfies the Rule making test.

## 2.4 The Commission’s assessment of the AER’s proposed Rule change against the National Electricity Objective

The AER’s Rule change proposal consists of the following three core components that would require the relevant scheduled generators and market participants to:

1. provide a ramp rate that is greater than a minimum ramp rate of 3 MW/minute except where it can be demonstrated to NEMMCO that a lower ramp rate is required for technical or safety reasons, and no more than the maximum ramp rate that an item of equipment is capable of achieving in normal circumstances.
2. provide market ancillary service parameters for generators that reflect the technical capability of the generator’s plant; and
3. declare themselves “inflexible” only when plant technical constraints justify such a declaration.

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<sup>4</sup> Section 88 of the National Electricity Law.

This section of the final Rule determination sets out the Commission's assessment of each component of the AER's Rule change proposal against the NEO.

1. **Requiring relevant scheduled generators and market participants to provide a ramp rate between the stipulated minimum and the maximum** would assist NEMMCO to maintain system security during critical periods when network constraints are binding. This will facilitate smooth and efficient operation of the spot market, which is one of NEMMCO's core functions. In addition, the amendment will contribute more broadly to the achievement of the NEO by clarifying the obligations, which in turn will enhance enforceability of the relevant provisions of the Rules. This will ultimately work to the benefit of all market participants and stakeholders.
2. **Requiring relevant scheduled generators and market participants to provide market ancillary service parameters for generators that reflect the technical capability of the generator's plant** would assist NEMMCO to operate the NEM so that electricity supply is secure. In particular, by preventing scheduled generators from varying their market ancillary service offers to pursue commercial objectives, NEMMCO will be able to respond more effectively to contingency events and during periods when network constraints are binding. This will help to facilitate smooth and efficient operation of the spot market, one of NEMMCO's core functions.
3. **Requiring relevant scheduled generators and market participants to declare themselves "inflexible" only when plant technical constraints justify such a declaration** would improve the markets' ability to deliver competitive outcomes and provide NEMMCO with the flexibility to manage events for the safe and secure operation of the power system. The amendment will contribute more broadly to the achievement of the NEO by enhancing the efficient operation of the market.

In addition, the inclusion of semi-scheduled generators in the Rule when the Schedule 2 of the National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2008 No. 2 comes into effect (on 31 March 2009) would ensure that system security issues could continued to be managed effectively.

The Commission considers that the proposed Rule change is unlikely to impose significant costs on the relevant generators and market participants as historical evidence indicates that most participants operate their plant within the technical parameters specified in the proposed Rule. The Rule change is also not likely to require major changes to the relevant scheduled generators', market participants' or NEMMCO's systems and processes since this Rule change clarifies provisions that are already in place. Some participants may require the physical and technical parameters related to their plant to be independently certified where the parameters differ from those specified by the manufacturer.

The Commission made some changes to the AER's proposed Rule change following submissions from stakeholders and where it considered these changes would further promote the NEO. The Commission considers that these changes maintain the core

elements of the proposed Rule as discussed above. These changes are set out in Section 3.

On balance, the Commission is satisfied that the Rule will or is likely to contribute to the achievement of the NEO. The Rule would ensure that the relevant participants provide ramp rates that do not constrain the ability to manage system security issues and that market ancillary service parameters and the declaration of dispatch inflexibility reflect the technical capability of plant.

The Rule would assist NEMMCO in responding to system security issues effectively and hence improve the reliability and security of the power system, and improve the efficiency of the NEM. The Rule will also enhance the AER's ability to enforce the provisions, which in turn will help to maintain system security as well as efficient dispatch outcomes in the NEM.

For these reasons, the Commission considers that the Rule making test under section 88 of the NEL is satisfied.

## **2.5 Rule Commencement**

This Rule is scheduled to commence on 31 March 2009.

### 3 Changes to the AER's proposed Rule and the draft Rules

#### 3.1 Changes to the AER's proposed Rule following first round consultations

First round submissions proposed a number of improvements to the AER's proposed Rule change and suggested some drafting changes. In addition, NEMMCO submitted that Schedule 2 of the National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2008 No. 2 in relation to the ramp rates of Semi-Scheduled Generators should be changed to clarify that dispatch offers for a Semi-Scheduled Generator should also include ramp rates and that Semi-Scheduled Generators should also be able to rebid available capacity, dispatch inflexibilities, or ramp rates.

The Commission accepted most of the changes proposed by the stakeholders, where it was shown to further promote the NEO. These changes are listed below. Detailed reasoning and the Commission's response to submissions are set out at **Appendix A**.

1. The draft Rule specified that lower threshold for ramp rate is the lower of 3MW/minute or 3% of the registered unit size.
2. The draft Rule clarified that the minimum ramp rate is to apply to individual physical generating units as opposed to aggregated generating units.
3. The draft Rule clarified that the ramp rate should be rounded to a ramp rate that can be safely complied with, to reflect NEMMCO's processes that require data to be entered as an integer.
4. The draft Rule amended Schedule 2 of the National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2008 No. 2 to require Semi-Scheduled Generators to include ramp rates in their dispatch offers and to comply with this Rule change.

The draft Rule included a number of drafting changes to the AER's proposed Rule change.

The Commission supported the proposal by the AER that clauses 3.8.3A(b), 3.8.3A(d), 3.8.3A(j), 3.8.7A (l), and 3.8.7A(m), subject to the outcomes of this Rule change process, be civil penalty provisions. Under the NEL, civil penalty provisions in the Rules may only be created with the MCE's agreement and by means of including the number of the relevant provision in the National Electricity (South Australia) Regulations (Regulations).

### 3.2 Differences between the draft Rule and the Rule to be made

Second round submissions raised the following issues with respect to the ramp rate provisions of the draft Rule:

1. a disproportionate impact on small generators compared to those that are larger than 100MW;
2. a disproportionate impact on aggregated generators where a number of generating units have been aggregated compared to a non-aggregated generating unit of the same size and potential issues in meeting the ramp rate requirements where only some of the generating units of an aggregated generator are available for dispatch; and
3. the Rules may be interpreted to require a generator to operate its plant at its full technical capability resulting in “undue wear and tear” on such plant.

NEMMCO also suggested a number of clarifications and improvements to the Rules which the Commission has accepted.

The Commission has considered the matters raised in the second round consultation and has amended the draft Rule as follows:

1. Clause 3.8.3Ab(1) of the Rules has been amended to permit a minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size rounded down to the nearest whole number, except that this number must not be less than 1MW/minute. This mitigates the disproportionate impact on generators with small generating units;
2. The minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size would apply to both aggregated and non-aggregated generating units (as opposed to individual physical generating units as per the draft determination). The reason for the draft determination was to ensure that the Rule did not create incentives for Generators to aggregate units and concerns that ramping capability may not be sufficient if applied to existing aggregated generators. Following discussions with NEMMCO, it has been established that the aggregation provisions in the Rules could be used to manage the “incentive to aggregate” concerns. NEMMCO has also confirmed that ramping capability for current aggregated units is likely to be sufficient for them to manage power system security. A review of the wording draft Rule indicates that as a result of clause 3.8.3(d) of the Rules, the draft Rule does not require further amendment. However, a note has been included in clause 3.8.3A to confirm that clause 3.8.3(d) applies.

The Commission has not changed the draft Rule to link the ramp rate requirement to “available capacity” as requested because the change in item 2 above significantly reduces the ramp rate requirements for aggregated generators and because the Rules permit generators to provide lower ramp rates for technical or safety reasons. There are also issues with respect to assessing ramp rate capability and enforcement if the ramp rates were dynamic, which will be the case if the ramp rates were to be linked to available capacity.



The Commission believes that these amendments, that reduce the disproportionate impact of ramp rates on small generating units whilst mitigating incentives to aggregate generating units, reduces the risk of disincentives for investment in smaller generating units and is likely to better contribute to the achievement of NEO.

With respect to the concerns that the Rules may be interpreted to require a generator to operate its plant at its full technical capability resulting in “undue wear and tear” on ageing plant, the Commission has acknowledged this as an issue and has clarified the interpretation of the Rule in the determination. The Commission considers that the reference to “to reflect physical capabilities” which an item of equipment is capable of achieving in normal circumstances, in the definition of maximum ramp rate can be interpreted to permit a Generator to provide a maximum ramp rate that is less than the minimum ramp rate of 3MW/minute or 3% of registered unit size, despite the plant being technically capable of achieving ramp rates higher than the minimum, where operating the plant at its full technical capability would result in undue “wear and tear” to the plant.

The reasons for these changes are detailed in Appendix A.

Consistent with the draft determination, the Commission will seek the MCE’s agreement that clauses 3.8.3A(b), 3.8.3A(d), 3.8.3A(j), 3.8.7A (l), and 3.8.7A(m) be made civil penalty provisions.

Under the NEL, civil penalty provisions in the Rules may only be created with the MCE’s agreement and by means of including the number of the relevant provision in the Regulations. The Commission notes that these provisions would only have civil penalty consequences upon the relevant amendments to Regulations coming into effect.

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## **A The Commission's Analysis**

This appendix outlines the Commission's response to submissions, and the Commission's analysis and reasoning for any changes made to the AER's proposed Rule change and to the Commission's draft determination.

### **A.1 The underlying cause**

#### **A.1.1 The AER's proposal**

The AER's proposal would limit the ability of the relevant scheduled generators and market participants to bid and rebid technical parameters in pursuit of commercial objectives when power system security could be compromised.

#### **A.1.2 First Round Submissions**

AGL and the NGF suggested that the Commission should reconsider addressing the underlying cause of the symptoms identified by the AER, which is the lack of a mechanism to allocate resources during congestion.

The NGF contended that the Rules that the AER was now seeking to change all appear to have been drafted on the implicit assumption that participants will wish to be dispatched in accordance with their market offers or bids. This may appear a natural assumption given the discretion that participants have to structure offers and bids as desired and further the opportunities that they have to change offers or bids when market circumstances have changed. The NGF stated that this assumption breaks down when there is a significant mismatch between the market dispatch process and the market settlement process, as now applies in the presence of transmission network congestion.

#### **A.1.3 The Commission's Analysis and Reasoning**

The Commission considered changes to the NEM's congestion management regime against the NEO, recommended Rule changes and flagged areas requiring further consideration in the future in its report on the Congestion Management Review (the CMR) in June 2008<sup>5</sup>.

The Terms of Reference for the CMR Review required that the Commission develop arrangements to improve the management of physical and financial trading risks associated with material transmission congestion. The Commission was also tasked with developing a location specific interim constraint management mechanism for managing material constraint issues until such time as they are addressed through investment or region boundary change.

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<sup>5</sup> Congestion Management Review, Final Report, Australian Energy Market Commission, June 2008.

The Commission was not persuaded that a location-specific interim constraint management mechanism would promote the NEO at this stage, given the prevailing patterns and economic materiality of congestion. Analytical work by the AER and the AEMC suggested that productive inefficiencies from dis-orderly bidding have been relatively minor to date. In addition, empirical research from NEMMCO showed that congestion has tended to be transitory and influenced significantly by network outages, hence it would be difficult to target exactly where localised pricing interventions should be applied.

Given the evidence that showed that transmission congestion has not been a material problem, and given the complexities associated with designing a location-specific interim constraint management mechanism the Commission was not persuaded that such a mechanism represents a net improvement in market efficiency at this time.

In response to the Terms of Reference, the Commission recommended four specific Rule changes to the MCE to improve the arrangements for managing financial and physical trading risks associated with material network congestion. The changes focus on enhancing the quality of information available to market participants to help them understand the risks associated with congestion, and on improving the effectiveness of risk management instruments. The MCE has endorsed the Commission's recommended Rule changes which will be the subject of further consultation in the near future.

As part of the CMR, the Commission noted that the impact on the NEM of government policy initiatives in response to climate change (including the promotion of renewable energy technologies) will be profound. These changes are likely to "stress test" the NEM's regulatory framework including the Congestion Management Regime, which may require a more fundamental change.

On 25 August 2008 the AEMC commenced the Review of Energy Market Frameworks in light of Climate Change Policies. The Terms of Reference for the Review have been provided by the Ministerial Council on Energy (MCE).

The Review focuses on assessing how the Australian Government's Carbon Pollution Reduction Scheme (CPRS) and expanded Renewable Energy Target may affect the existing energy market frameworks and to determine, what if any amendments are needed to those frameworks as a result.

The Commission considered that the Review of Energy Market Frameworks in light of Climate Change Policies was the appropriate forum to consider mechanisms to allocate resources during congestion. In the meantime, the Commission decided that it would consider any necessary incremental Rule changes relating to these issues that satisfies the NEO.

#### **A.1.4 The Commission's Draft Decision**

The Commission noted the views of AGL and the NGF.

### **A.1.5 Second Round Submissions**

There were no second round submissions on this matter.

## **A.2 Minimum ramp rate specified in MW/minute**

### **A.2.1 The AER's proposal**

The AER's proposal would impose a minimum ramp rate for the relevant Scheduled Generators, Market Customers, or Market Network Service Providers of 3 MW/minute, except where a lower ramp rate is required for technical or safety reasons.

### **A.2.2 First Round Submissions**

Hydro Tasmania contended that a fixed minimum ramp rate independent of generator size would penalise smaller units unfairly and potentially create a wealth transfer to larger generators. Hydro Tasmania proposed addressing this issue by setting minimum ramp rate proportional to the registered unit size (rounded to the nearest integer).

AGL was concerned that a uniform minimum ramp rate would unfairly penalise smaller participants. AGL cited the example of where a 50 MW unit would be required to ramp at 6% of its maximum capability, whereas a 600 MW unit would only be required to ramp at 0.5% of its maximum capability. AGL suggested that the minimum ramp rate should be set to the lesser of 1% of the registered capacity of the unit (rounded up to the nearest integer) and the registered maximum ramp rate from Schedule 3.1 of the Rules for that unit. AGL contended that this would allow proportionate sharing of a constrained resource for units of all sizes (whether aggregated or not), and allow for technical constraints as registered in Schedule 3.1 of the Rules.

### **A.2.3 The Commission's Analysis and Reasoning**

The AER's proposal was based on the analysis of bids for 2007 which showed that all except for a handful of generators bid at 3MW/minute or greater most of the time. Past ramp rate bidding practices, therefore, suggested that a level of 3MW/minute minimum ramp rate would be sufficient for most generators. The AER also advised that NEMMCO was of the view that 3MW/minute should accommodate the vast majority of system security issues that may arise in the context of the national electricity market.

The Commission also noted that a ramp rate of 3MW/minute applied to the physical generating units as discussed in section A.3 would result in a disproportionately high ramp rate for aggregated units.

In light of the equity issues raised by Hydro Tasmania and AGL, and the impact on ramp rates when applied to physical generating units, the AEMC consulted NEMMCO to establish if a minimum ramp rate linked to the registered unit size might be accommodated. NEMMCO indicated that a minimum ramp rate of the lower of 3 MW/minute or 3% of the registered unit size, except where a lower ramp rate is required for technical or safety reasons, was likely to accommodate majority of system security issues that may arise in the context of the national electricity market.

#### **A.2.4 The Commission's Draft Decision**

The Commission decided to amend the proposed clause 3.8.3Ab(1) of the Rules to permit a minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size.

#### **A.2.5 Second Round Submissions**

The NGF consider that clause 3.8.3A(b)(ii) of the draft Rule (minimum ramp rate of the lower of 3MW/minute or 3% of registered unit size of a generating unit) unnecessarily favours larger units without providing a justifiable benefit to system security.

A joint submission by Snowy Hydro, AGL and Hydro Tasmania supports the comments by the NGF arguing that the draft Rule places a disproportionately higher obligation on smaller generators to provide more ramp down capability.

The NGF, Snowy Hydro, AGL and Hydro Tasmania submit that the ramp rates required from the smaller units (<100MW) is a higher proportion than those for larger unit sizes (> 100MW) and as such is inequitable and inefficient as the smaller generating units will suffer greater degradation of plant which in the long term will result in lower reliability and is therefore not in the long term interest of consumers.

The NGF, Snowy Hydro, AGL and Hydro Tasmania consider that the ramp rate should be a percentage of the registered capacity or a mix of a fixed rate and a percentage of registered capacity with a lower bound of 1MW/minute that ensures an equivalent impact on both large and small generators.

NEMMCO supports the proposal for a minimum ramp rate of the lower of 3MW/minute or 3% of registered unit size. NEMMCO submits that the intention of the proposal is to limit the ability of Generators and Market Participants to use "technical" or "physical" parameters where system security could be compromised.

NEMMCO notes the concerns raised regarding the proposed ramp rates favouring large Generators over small Generators and the impact on ageing plant. Given that one of NEMMCO's key roles is to maintain the security of the power system, NEMMCO will only support ramp rates that allows it do so.

NEMMCO's submission also referred to the recent event of 31 October 2008, where its preliminary analysis indicates that ramp rates are likely to have had a bearing on dispatch, pricing and interconnector capacity outcomes for that day.

NEMMCO published the Market Event Report<sup>6</sup> on the events of 31 October 2008 on 17 December 2008. In section 5.2 of the report NEMMCO provides a comparison of the ramp down rates of Mt Piper units on 30 and 31 October 2008. NEMMCO notes that the lower offered ramp down rates for the Mt Piper units of 1MW/minute reduced the likelihood of a feasible solution that satisfied both the constraint equation and the supply necessary to meet increasing regional demand.

NEMMCO goes on to discuss the impact of the reduction in ramp rate to provide an understanding of the way in which ramp rate limits can affect the identification of a feasible dispatch and pricing solution when regional demand is changing, and to demonstrate how, under certain conditions such as those during this event, additional supply can be made available to a region by actually reducing the output of critical generating units within that region. NEMMCO notes that during this event, on-line system analysis tools confirmed that the violation of the constraint equation did not mean that the power system was insecure.

In the Market Event Report NEMMCO stressed that it should be noted, however, that the constraint equations in the NEMDE are the primary means of managing power system security and their violation is an indicator of a power system security issue.

#### **A.2.6 The Commission's Analysis and Reasoning**

The Commission considers that the objective of the AER's Rule change proposal is to provide NEMMCO with sufficient ramp rate capability for it to be able to manage power system security. The AER considered that the provisions in the Rules relating to ramp rates, including the ability to bid and rebid ramp rates, were intended to be linked to physical or technical capabilities of relevant plant and equipment. The AER had considered and ruled out the option of limiting generators' ramp rate bids and rebids to actual physical or technical capability of their plant because operating plant at or near its ramp rate limits would typically increase wear and tear and maintenance costs and could have the perverse effect of incentivising investment in slower technology and/or reduction in performance in existing plant. The AER had proposed that the ramp rates be limited to between a minimum of 3MW/minute and the maximum ramp rate that the plant is able to achieve, noting that majority of the generating units would be able to operate within these limits.

During the first round of consultations, stakeholders were concerned that AER's proposal would place a disproportionate burden on smaller generators and create incentives to aggregate generating units (aggregation is addressed in section A.3).

To address the first concern, the Commission had established the minimum ramp rate as the lower of 3MW/minute or 3% of registered unit size in its draft determination. This would have ensured that the majority of the generating units

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<sup>6</sup> Market Event Report: High Energy Prices in New South Wales and Queensland 31 October 2008; <http://www.nemmco.com.au/opreports/180-0088.pdf>

would be able to meet this threshold whilst ensuring sufficient ramping capability for NEMMCO to manage power system security.

The Commission notes that the draft Rule would have the effect of requiring Generators which have a registered capacity of less than 100MW to provide a ramp rate of 3% of their registered capacity and those with a registered capacity of 100MW or more to provide a ramp rate of 3MW/minute (which in percentage terms declines from 3% for a 100 MW unit to a lower percentage as the registered capacity of a generating unit increases above 100MW). The draft Rule allows Generators to provide alternative ramp rates if the units are not capable of achieving the limits specified in the Rule.

In light of the continuing equity concerns raised by the NGF, Snowy Hydro, AGL and Hydro Tasmania, the Commission has examined further options with a view to strike a balance between these concerns and the physical and technical limitations of generating units when considering ramp rate capability to manage power system security.

The ramp rate that may be provided by a Generator is limited by the physical and/or technical parameters of the generating units. There are likely to be some generating units which will not be able to achieve ramp rates that would be required if the same percentage ramp rate were to be adopted for all generating units across the board.

The AEMC has assessed that ramp rate bids for 2007 against a minimum ramp rate of 1% of registered capacity applied to all generating units. The assessment indicates that there will be several generating units whose average historical ramp down rates would fall below the 1% of the registered capacity limit. These units would be limited to lower ramp rates due to physical and technical reasons, with the result that the average percentage rate would need to be higher than 1% of registered capacity.

Physical and technical constraints on the ramp rates, suggests that it would not be possible to make a Rule that would have the same impact on all generators. The Commission however, believes that a Rule that further reduces the impact on the smaller generators would reduce the risk of disincentives for investment in smaller generating units and is likely to better contribute to the achievement of NEO.

The Commission has therefore decided to amend its draft decision to require that the minimum ramp rate be set to the lower of 3MW/minute or 3% on registered capacity **rounded down** to the nearest whole number, except that this number must not be less than 1MW/minute. This would mean that the ramp rate required of generating units whose capacity is less than 100MW will be either 2MW/minute or 1 MW/minute.

### **A.2.7 The Commission's Final Decision**

The Commission has decided to amend the proposed clause 3.8.3A(b)(1) of the Rules to permit a minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size rounded down to the nearest whole number, except that this number must not be less than 1MW/minute.



## **A.3 Application of minimum ramp rates to aggregated units**

### **A.3.1 First Round Submissions**

Macquarie Generation believed that the AER's proposed minimum ramp rate could be interpreted as applying to aggregated units rather than the individual physical units that form the aggregated unit. Macquarie Generation proposed addressing this issue by changing the definition of "generating unit" to refer to a single, physical unit.

TRUenergy believed that minimum ramp rates should apply to single physical generating units rather than aggregated units.

### **A.3.2 The Commission's Analysis and Reasoning**

The Commission accepted the AER's view that the provisions of the Rules relating to ramp rates, including the ability to bid and rebid ramp rates, were intended to be linked to physical or technical capabilities of the relevant plant or equipment. The intent of the AER's proposal was to ensure that sufficient ramping capability was available to NEMMCO to ensure that system security is maintained.

The Commission noted that the Rule change as proposed may lead to incentives to aggregate units. However, the application of a 3MW/minute ramp rate, as proposed, to individual physical units, may impose a higher burden on smaller generating units that were aggregated.

The Commission's draft decision to permit a minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size in section A.2 mitigated the impact on smaller generating units.

### **A.3.3 The Commission's Draft Decision**

The Commission decided to clarify that the ramp rates would apply to individual physical generating units. Where physical generating units were aggregated, the ramp rates applicable to each separate generating unit were to be added together.

### **A.3.4 Second Round Submissions**

NGF, Snowy Hydro, AGL and Hydro Tasmania submitted that linking ramp rates to individual generating units places a disproportionate burden on aggregated generators where a number smaller generating units have been aggregated. Snowy Hydro, AGL and Hydro Tasmania provide an example illustrating that a 600MW unit would be required to provide a ramp rate of 3MW/minute whereas an aggregated generator with 10 x 60MW units (600MW) would be required to provide a ramp rate of 10 x 2MW/minute (20MW/minute). They also show that at times of VoLL, this would commercially disadvantage the aggregated generator by \$70K per dispatch interval.

Further, the NGF, Snowy Hydro, AGL and Hydro Tasmania argue that applying the ramp rates to registered capacity adversely impacts on aggregate generator units where only some of the generating units are made available to meet the dispatch target. They suggest that the ramp rate should be linked to *available capacity* rather than the registered capacity.

The NGF, Snowy Hydro, AGL and Hydro Tasmania have suggested alternative drafting of the proposed Rule.

### **A.3.5 The Commission's Analysis and Reasoning**

The two issues arising from the draft Rule as raised by the stakeholders above could be summarised as follows:

- A disproportionate burden on aggregated generators compared to similar size non-aggregated generators; and
- Since not all units of an aggregated generator may be available for dispatch, the provision of the ramp rates based to registered unit size (aggregated capacity) could impose a higher ramping requirement on aggregated generators.

The example provided by Snowy Hydro, AGL and Hydro Tasmania above illustrate the differences in impact.

Under the Commission's revised decision on ramp rate in section A.2.7, a 600MW generator would be required to provide a ramp rate of 3MW/minute whilst a 10 x 60MW aggregated generator would be required to provide a ramp rate of 10 x 1MW/minute (10MW/minute).

The AER's original Rule change proposal required a ramp rate of 3MW/minute from all generators, both with aggregated and non-aggregated generating units. Under the AER's proposal the ramp rate from both the aggregated and non-aggregated generators in the above example would be the same.

Macquarie Generation and TRUenergy in their first round submissions to the AER's Rule change proposal argued that the Rule as proposed by the AER could lead to incentives for generators to aggregate units and that aggregation of units may result in insufficient ramping capability:

"Macquarie Generation considers that the Rule should apply to each single operating unit in the NEM. In the absence of such an obligation, generation businesses would have a commercial incentive to register existing plant on an aggregated basis for dispatch purposes to minimise their overall ramping obligations during periods of limited supply.

An increase in the registration of aggregated units would shift the burden for ramp rate changes to non-aggregated units. Such an outcome would seem to run counter to the AER's intention of selecting a pragmatic minimum ramp rate figure to apply to all available generating sources during system security events. The use of aggregated

units could reduce the effectiveness of the AER's proposed solution and possibly lead to a further review of this Rule if system security is compromised."<sup>7</sup>

TRUenergy also submitted that the ramp rate should be applied to individual physical units:

"The definition of scheduled generating units in the Rules covers both individual and physical units, as well as aggregated units.

The intent of this part of the rule change is to ensure that sufficient ramping capability is available to the system to ensure security can be maintained. The AER has recognised the commercial incentives can at times drive participants to seek to limit their ramping ability. Under the AER's change, these commercial drivers will remain, and in some situations – they could create incentives for participants to seek aggregation of units in order to diminish their aggregate ramping capability. Such an outcome would be undesirable.

In order to minimise this incentive, we suggest that the rule wording is changed to apply the limit to individual physical units."<sup>8</sup>

In order to address these concerns, the Commission, in its draft decision, decided that the ramp rate should apply to individual physical generating units.

Following second round submissions from the NGF, Snowy Hydro, AGL and Hydro Tasmania, alternative ways of addressing the concerns raised Macquarie Generation and TRUenergy were investigated. NEMMCO was consulted to examine if there are alternative mechanisms to address the 'incentive to aggregate' concerns and to establish if a 3MW/minute minimum ramp rate limit on existing aggregated generators would provide sufficient ramping capability.

Clause 3.8.3 (a) of the Rules requires that Scheduled Generators or Market Participants who wish to aggregate their units for the purpose of central dispatch and settlements must apply to NEMMCO to do so. Under clauses 3.8.3 (b) and (c) of the Rules, some of the conditions that must be fulfilled for NEMMCO to approve application for aggregation are that power system security must not be materially affected by the proposed aggregation or that such aggregation would not materially distort central dispatch. Furthermore, under clause 3.8.3 (e) of the Rules, NEMMCO may also apply conditions when approving an application for aggregation.

The Commission is therefore, satisfied that the Rules provide NEMMCO with the ability to reject or place conditions on applications for aggregation if the approval of an application for aggregation would affect power system security or materially distort central dispatch. NEMMCO has also confirmed that a minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size, when applied to the existing aggregated generating units, is likely to provide sufficient ramp rate capability.

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<sup>7</sup> Bidding and Rebidding Technical Parameters, Macquarie Generation, June 2008.

<sup>8</sup> TRUenergy comments on the AER Technical parameter rule change request, TRUenergy, June 2008.

Based on this assessment, the Commission considers that the Rule change as proposed by the AER does not need to be amended.

The Commission has also examined whether the ramp rates should apply to registered unit size or to available capacity.

The Commission notes that, for various reasons, the MW capacity available for dispatch (available capacity) is likely to vary from registered capacity for both aggregated and non-aggregated generating units. Therefore, linking the ramp rate to available capacity would mean that ramp rates would vary with available capacity. This could make the assessment of whether sufficient ramping capacity is available difficult, result in enforcement issues and could provide an alternative means of managing ramp rates for commercial reasons, for example, by varying the available capacity. This could have a negative impact on NEMMCO's ability to manage power system security and as such is not likely to contribute to the achievement of NEO.

Further, the Commission's final decision on ramp rates, the ramp rates required from aggregated generators would be significantly lower than under the Commission's draft decision. The Rule also provides for a ramp rate that is less than the minimum where physical or safety reasons require it.

Based on these considerations, the Commission has decided against making the ramp rates a function of available capacity. Where relevant, the ramp rates are to remain a function of registered unit size, as per the draft decision.

### **A.3.6 The Commission's Final Decision**

The Commission has decided to review its draft decision on aggregation and to adopt the Rule change as proposed by the AER. A minimum ramp rate of the lower of 3MW/minute or 3% of the registered unit size would apply to both aggregated and non-aggregated generating units (as opposed to individual physical generating units). A review of the wording draft Rule indicates that as a result of clause 3.8.3(d) of the Rules, the draft Rule does not require further amendment. However, a note has been included in clause 3.8.3A to confirm that clause 3.8.3(d) applies.

## **A.4 Ability for generators to offer ramp rates less than 3 MW/minute**

### **A.4.1 First Round Submissions**

Delta Electricity was concerned that the long-term operational efficiency would be reduced if a minimum ramp rate of 3 MW/minute was adopted. Base-load plant generally operate at maximum output 24 hours a day, and thus have little need to ramp production up or down. Whereas mid-merit plant ramp production up and down throughout the day to meet changes in demand. Delta Electricity explained that to minimise the additional stresses on plant from ramping, generators generally ramp their plant at a rate well below the plant's technical capability. For ageing plant such as Munmorah Power Station, Delta often sets a ramp rate of less than 3 MW/minute under normal operating conditions to deliver the lowest operating cost over the remaining life of the plant. Forcing mid-merit plant to ramp at a rate of at

least 3 MW/minute may result in some mid-merit plant removing themselves from price setting by bidding into higher priced bid bands which would result in the dispatch of higher cost plant.

Delta proposed allowing the relevant scheduled generators or market participants to bid a ramp rate that may be less than 3 MW/minute, if it is necessitated by operating conditions that prevent the relevant generating unit from maintaining a ramp rate of at least 3 MW/minute, after obtaining approval from NEMMCO.

#### **A.4.2 The Commission's Analysis and Reasoning**

The Commission acknowledged Delta Electricity's concerns that for ageing plant such as its Munmorah Power Station, a ramp rate of 3 MW/minute may be technically possible, but could result in higher "wear and tear" costs compared to newer plant.

The AER's Rule change proposal would permit plant that is not able to physically or safely ramp at 3 MW/minute, due to an event or occurrence, to submit a ramp rate that is less than 3 MW/minute (see clause 3.8.3A(c) of the Rules). The proposed Rule that limits the ramp rates to between 3 MW/minute and the maximum ramp rate, will not apply where the ramp rate of the plant is determined to be less than 3 MW/minute (see clause 3.8.3A(i) of the Rules).

Further, the maximum ramp rate is defined in the proposed Rule as that which an item of equipment is capable of achieving in normal circumstances. This may be:

- (a) as specified by the manufacturer; or
- (b) as independently certified from time to time to reflect changes in the physical capabilities of the equipment.

The Commission was of the view that the proposed Rule provided sufficient scope for establishing optimal ramp rates for ageing plant under normal operating conditions.

In addition, a requirement on NEMMCO to provide prior approval for ramp rates lower than the minimum for operating reasons could lead to complex arrangements, if they were to be applied in a consistent and transparent manner. The Rules would need to provide an approval process or for NEMMCO to establish and publish guidelines on how it would approve lower ramp rates in the circumstances outlined by Delta Electricity.

#### **A.4.3 The Commission's Draft Decision**

Based on the above, the Commission decided not to make any changes to the proposed Rule.

### A.4.3 Second Round Submissions

Delta Electricity continues to maintain that the draft Rule:

- Does not adequately account for optimal operations of ageing plant with technical ramp rate capability above 3MW/minute; and
- Will result in some generators removing themselves from price setting by bidding into higher price bands.

Delta Electricity contested the Commission's conclusion in its draft determination that the proposed Rule provides sufficient scope for establishing optimal ramp rates for ageing plant under normal operating conditions. Delta Electricity provided legal advice from Middleton's to support its view.

Delta Electricity requests a modification to the proposed Rule to explicitly recognise the normal operating ramp rates for ageing plant as follows (underlined):

*"3.8.3A(c) A Scheduled Generator or Market Participant to which this clause 3.8.3A applies may provide a ramp rate to NEMMCO that is less than that specified in clause 3.8.3A(b)(1) if the ramp rate is affected by an event or other occurrence (or by the age or physical condition of the relevant generating unit, scheduled load or scheduled network services or its operating conditions) that:*

(1) physically prevents the relevant *generating unit, scheduled load or scheduled network service* from attaining a ramp rate of at least that specified in clause 3.8.3A(b)(1); or

(2) makes it unsafe for the relevant *generating unit, scheduled load or scheduled network service* to operate at a ramp rate of at least that specified in clause 3.8.3A(b)(1), or

(3) would result in undue deterioration of the condition of the relevant *generating unit, scheduled load, or scheduled network service*, or otherwise prejudice its continuing efficient operation, when operating at a ramp rate of at least that specified in clause 3.8.3A(b)1

for the period of time in which the ramp rate is affected by that event or other occurrence (or by that age or physical condition)."<sup>9</sup>

Delta acknowledges that it would be difficult to provide an unambiguous definition of ageing plant.

### A.4.4 The Commission's Analysis and Reasoning

Further discussions with Delta Electricity have assisted in clarifying their concerns. Delta Electricity advised that their ageing plant, Munmorah in particular, can

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<sup>9</sup> Ramp rates, Market Ancillary Service Offers, and Dispatch Inflexibility, Delta Electricity, December 2008.

technically achieve ramp rates that are more than the minimum ramp rate of 3MW/minute required under the Rules. However, if the Munmorah units were to be operated at this higher ramp rate all or most of the time, then there would be undue “wear and tear” on the ageing plant.

Delta Electricity is concerned that the current wording of the Rule does not provide it with the option to provide a ramp rate lower than the minimum ramp rate of 3MW/minute because its plant is technically capable of achieving a higher ramp rate.

The Commission considers the Rules should not require a Generator to operate plant at ramp rates that would lead to undue “wear and tear” of plant in circumstances described by Delta Electricity. This is not a concern for most Generators as they would normally operate in the range between the minimum ramp rate stipulated in the Rules and up to their plant’s maximum ramp rate capability.

The issue arises where a plant is technically capable of achieving higher ramp rates, but would need to be operated at ramp rates below the minimum if undue “wear and tear” is to be avoided.

Delta Electricity has proposed an amendment to the draft Rule to mitigate this issue. A Rule that allows such flexibility would however, need to be unambiguous and enforceable, and should be designed to prevent Generators from bidding ramp rates below the minimum to pursue commercial objectives, especially in the event of a binding network constraint, if the objective of the AER’s Rule change proposal is to be achieved.

The Commission believes that the amendments proposed by Delta Electricity is not unambiguous and is likely to result in enforcement difficulties. Delta Electricity has also acknowledged that this is an issue.

The Commission maintains its initial view that the Rule as drafted provides sufficient flexibility to address the ageing plant issue raised by Delta Electricity. As outlined in the analysis leading to the draft decision there are two provisions in the AER’s Rule change proposal that provide for ramp rates lower than the minimum limit of 3MW/minute or 3% of registered unit size.

Clause 3.8.3A(c) of the Rules provides for a lower ramp rate, if the ramp rate is affected by an event or occurrence that physically prevents a unit from achieving the minimum ramp rate or where it makes it unsafe for the unit to achieve the minimum ramp rate. The Generator would be required to provide a brief, verifiable and specific reason to NEMMCO as to why the ramp rate is below the stipulated minimum. This provision would allow for ramp rates to be occasionally outside the minimum and the maximum range provided there was a physical or safety reason for it.

Clause 3.8.3A(h) of the Rules allows a Generator to provide a maximum ramp rate that is less than 3MW/minute or 3% of registered unit size. Under this scenario, the Rule that limits the ramp rates to between 3 MW/minute or 3% of registered unit size and the maximum ramp rate, will not apply (see clause 3.8.3A(i) of the Rules).

The Generator would be required to provide a brief, verifiable and specific reason to NEMMCO as to why the maximum ramp rate is below the stipulated minimum.

The maximum ramp rate is defined as that which an item of equipment is capable of achieving in normal circumstances. This may be:

- (a) as specified by the manufacturer; or
- (b) as independently certified from time to time to reflect changes in the physical capabilities of the equipment.

Under this provision, a Generator may provide a maximum ramp rate that is less than 3MW/minute or 3% of registered unit size.

The Commission considers that the reference to “to reflect physical capabilities” which an item of equipment is capable of achieving in normal circumstances, in the definition of maximum ramp rate can be interpreted to permit a Generator to provide a maximum ramp rate that is less than the minimum ramp rate of 3MW/minute or 3% of registered unit size, despite the plant being technically capable of achieving ramp rates higher than the minimum, where operating the plant at its full technical capability would result in undue “wear and tear” to the plant. The Generator must ensure that such a maximum ramp rate has been independently certified in accordance with the Rules. Despite the above consideration, the Commission notes that the requirement of sufficient ramp rate capability for NEMMCO to manage power system security remains paramount.

#### **A.4.5 The Commission’s Final Decision**

Based on the above clarification, the Commission has decided not to make any changes to the draft Rule.

### **A.5 AER audit of ramp rates slower than 3 MW/minute**

#### **A.5.1 First Round Submissions**

Snowy Hydro believed that any generator that notifies NEMMCO of a ramp rate which is less than the proposed minimum should be audited by the AER.

#### **A.5.2 The Commission’s Analysis and Reasoning**

Under the NEL, the AER’s enforcement role and powers allow it to investigate and take action against possible breaches of the Rules. The AER has proposed that the new clause setting a minimum ramp rate of 3 MW/minute be a civil penalty provision. The AER has proposed the new clause 3.8.3A(f) of the Rules that would allow the AER to request additional information from the relevant scheduled generator or market participant to verify a reason provided for a ramp rate below the minimum.



The Commission was of the view that the AER has adequate powers under the NEL to investigate and take action against breaches of the Rules where necessary. The AER has broad discretion as to how it monitors compliance with the Rules and its methods for detecting Rule breaches by market participants. The Commission considered that placing an obligation on the AER to audit every notification of ramp rates below the minimum would place an inefficient burden on the AER. In the absence of a mandatory audit requirement, the AER would have scope to develop an efficient method of monitoring and detecting breaches of any new requirements resulting from this Rule change.

### **A.5.3 The Commission's Draft Decision**

The Commission determined not to impose an obligation on the AER to audit any generator that notifies NEMMCO of a ramp rate which is less than the proposed minimum.

### **A.5.4 Second Round Submissions**

There were no second round submissions.

### **A.5.5 The Commission's Final Decision**

The Commission confirms its draft decision.

## **A.6 The rounding of ramp rates to an integer (proposed clause 3.8.3A(d))**

### **A.6.1 First Round Submissions**

The NGF was concerned that due to the rounding of ramp rates to an integer number by NEMMCO's systems, the proposed Rule change could result in some generators with a requirement to ramp at a rate slower than 3 MW/minute being forced to ramp at an unsafe rate.

### **A.6.2 The Commission's Analysis and Reasoning**

The proposed clause 3.8.3A(d) of the Rules requires that any submitted ramp rate that is less than 3 MW/minute be at least the maximum ramp rate that the plant can safely attain. As NEMMCO's data entry process requires ramp rates to be integer numbers, clause 3.8.3A(d) of the Rules could be interpreted as requiring a generator that can only safely ramp at 1.1 MW/minute to submit a ramp rate of 2 MW/minute.

The Commission agreed that proposed clause 3.8.3A(d) of the Rules could be interpreted as requiring a generator to ramp at an unsafe rate. In practice this issue was unlikely to be material because the Commission expected the AER to be pragmatic in interpreting and enforcing this requirement. However, to be consistent with good regulatory practice principles, the Commission was of the view that the

Rules should not impose obligations on the relevant scheduled generators and market participants that cannot be safely complied with. As such the Commission decided to amend proposed clause 3.8.3A(d) of the Rules to remove any doubt that proposed clause 3.8.3A(d) of the Rules would not require generators to ramp at an unsafe rate.

The Commission believed that it is the words “at least” that have resulted in the issue identified by the NGF. These words were seen as unnecessary as no generator would voluntarily submit a ramp rate that is greater than the rate which that generator can safely attain. By removing these words, the clause would read:

“ (d) Where a *Scheduled Generator, Market Customer or Market Network Service Provider* provides a *ramp rate* to which this clause 3.8.3A applies, that is less than 3 MW/minute, it must provide a *ramp rate* that is ~~at least~~ the maximum the relevant *generating unit, scheduled load or scheduled network service* can safely attain at that *time*.”

Under this revised drafting, a Generator would be required to provide a ramp rate that is the maximum the generating unit can safely attain at that time. Therefore as NEMMCO’s data entry process requires integer numbers, a Generator that can only safely ramp at 1.1 MW/minute would be required to provide a ramp rate of 1 MW/minute because 2 MW/minute is greater than the maximum ramp rate that generator can safely attain.

### **A.6.3 The Commission’s Draft Decision**

The Commission decided to amend proposed clause 3.8.3A(d) of the Rules to remove any doubt that the proposed clause will not require generators to ramp at an unsafe rate.

### **A.6.4 Second Round Submissions**

There were no second round submissions.

### **A.6.5 The Commission’s Final Decision**

The Commission confirms its draft decision.

## **A.7 Provision of ramps rates via SCADA**

### **A.7.1 First Round Submissions**

NEMMCO noted that Scheduled Generators are also able to vary ramp rates using SCADA, and that this is the means most commonly used by Generators for varying ramp rates. NEMMCO contended that there are no practical arrangements nor is it feasible for reasons to be provided and recorded when SCADA limits are changed. NEMMCO considered that the AER’s proposal should address this issue.

### **A.7.2 The Commission’s Analysis and Reasoning**

In the event that a Scheduled Generator seeks to vary ramp rates to parameters outside those specified in the Rules, it has an obligation to comply with the Rules in terms of providing a statement of reasons to NEMMCO.

The Commission acknowledged that when a Generator changes its ramp rates via the SCADA system, there was no provision to provide reasons where the ramp rate was outside the proposed limits. Under such circumstances, the Commission considered that the onus should be on the Generator to rebid that ramp rate through NEMMCO’s bidding systems to reflect the revised the ramp rate provided via SCADA systems. The reasons should be provided as part of the rebid.

### **A.7.3 The Commission’s Draft Decision**

The Commission decided not to amend this aspect of the Rule change proposed by the AER.

### **A.7.4 Second Round Submissions**

There were no second round submissions.

### **A.7.5 The Commission’s Final Decision**

The Commission confirms its draft decision.

## **A.8 New definition “maximum nameplate ramp rate”**

### **A.8.1 The AER’s proposal**

The AER’s proposal would introduce the new definition “maximum nameplate ramp rate” to ensure that the ramp rates provided in accordance with Schedule 3.1 of the Rules are physical maximums.

### **A.8.2 First Round Submissions**

NEMMCO believed that the word “nameplate” is not appropriate as ramp rates limits do not appear on nameplates. NEMMCO proposed removing the word “nameplate” from the definition.

### **A.8.3 The Commission’s Analysis and Reasoning**

The Commission noted that the use of the term ‘nameplate’ may be misleading.

#### **A.8.4 The Commission’s Draft Decision**

The Commission decided to amend the definition to maximum ramp rate as proposed by NEMMCO.

#### **A.8.5 Second Round Submissions**

There were no second round submissions.

#### **A.8.6 The Commission’s Final Decision**

The Commission confirms its draft decision.

### **A.9 Definition of “ramp rate”**

#### **A.9.1 The AER’s proposal**

The AER’s proposal would amend the definition of “ramp rate” by clarifying that the ramp rate must be expressed in MW/minute, and by specifying that a ramp rate can include both upward and downward rates of change.

#### **A.9.2 First Round Submissions**

NEMMCO did not believe the addition of the words “upward and downward” added any value to the definition. The critical concept is the available rate of change that is offered or bid, not the actual ramp rate to which a unit is dispatched. NEMMCO proposed amending the definition of ramp rate to “The rate of change of active power (expressed in MW/minute required for dispatch”.

#### **A.9.3 The Commission’s Analysis and Reasoning**

The Commission accepted NEMMCO’s view and reasoning that the distinction between “upward and downward” rate of change was not necessary.

#### **A.9.4 The Commission’s Draft Decision**

The Commission decided to amend the definition of ramp rate in Schedule 3.1.

#### **A.9.5 Second Round Submissions**

NEMMCO notes that only part of the amendment suggested by it during first round consultation has been implemented. NEMMCO requests that the definition or ramp rate be simplified as requested to “The rate of change of *active power* (expressed in MW/minute required for dispatch”.

Further, NEMMCO considers that the Rules need to clarify that a Scheduled Generator (and Semi Scheduled Generator as of 31 March 2009) or Market Participants must provide two ramp rates as part of providing a valid dispatch offer and bid, this includes an “up” and “down” ramp rate. NEMMCO also requests that the term “MW/minute” be omitted in certain clauses as it is already part of the definition of the ramp rate and is therefore redundant. Clauses 3.8.3A(b), 3.8.4 (c), (d), (e), 3.8.6(b)(3), 3.8.6A(b)(2), and 3.8.7 are affected.

#### **A.9.6 The Commission’s Analysis and Reasoning**

The Commission intended to amend the definition as requested by NEMMCO.

The Commission also accepts the clarifications to the Rules suggested by NEMMCO.

#### **A.9.7 The Commission’s Final Decision**

The Commission has decided to amend the definition of ramp rate in Schedule 3.1. The Commission has decided to amend clauses 3.8.3A(b), 3.8.4 (c), (d), (e), 3.8.6(b)(3), 3.8.6A(b)(2), and 3.8.7 to clarify that an “up” and a “down” ramp rate is required and to remove the redundant item “MW/minute” as requested by NEMMCO.

### **A.10 Market Ancillary Service technical characteristics**

#### **A.10.1 The AER’s proposal**

The AER’s proposal would require Market Ancillary Service<sup>10</sup> Offers to represent the “technical characteristics” of the plant.

#### **A.10.2 First Round Submissions**

Delta Electricity contended that a generating unit’s FCAS capability can vary from its technical performance standard as a result of changing plant conditions. Delta sought clarification that “technical characteristics” refers to a plant’s technical characteristics at the time of dispatch.

TRUenergy stated that ensuring FCAS bids completely align with actual capability is not possible because precise capabilities vary with time and operating conditions. TRUenergy proposed a level of flexibility be provided. TRUenergy understood that considerations of this nature influenced the AER’s decision to propose an absolute minimum ramp rate rather than a ramp rate based on technical characteristics.

Macquarie Generation contended that the obligation to demonstrate that Market Ancillary Service Offers represent the physical or technical capability of plant during any particular market event is potentially a cumbersome and costly exercise.

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<sup>10</sup> Commonly referred to as frequency control ancillary service (FCAS).

Macquarie Generation proposed using a more general approach such as minimum and maximum enablement points which would avoid the need to define the technical capability of the plant. It proposed setting a minimum and maximum enablement points to >60% and <90%, respectively of the unit's registered capacity. This would align the requirements for Market Ancillary Service Offers with that for ramp rates where the AER chose to propose a minimum ramp rate to avoid the costs and difficulties of a solution based on technical limits.

### **A.10.3 The Commission's Analysis and Reasoning**

The Commission accepted the view of Delta Electricity that the 'technical characteristics' should reflect the plants technical characteristics at the time of the dispatch.

The AER stated that the FCAS trapezium is designed to represent technical limitations associated with the plant that will be supplying FCAS, although not explicitly stated in the Rules. The AER noted precedents occurring in the past, where FCAS was bid or rebid to pursue commercial objectives, that have affected NEMMCO's ability to ensure security of the system however, the frequency of such occurrences have been low.

The Commission agreed with the AER that the Rules needs to clarify that the market ancillary service bids and rebids should represent technical limitations associated with the plant that will be supplying market ancillary service.

The Commission noted the preference by TRUenergy and Macquarie Generation for limits to be established for the minimum and maximum enablement points to reflect the fact that it is not possible to completely align the market ancillary service bids to actual capability and potentially cumbersome and costly exercise to demonstrate that the bids represent physical and technical capability. The alternative of setting the technical parameters with reference to the unit's registered capacity could result in similar issues as for ramp rates where due to ageing plant or changing operating conditions a unit is not able to achieve the specified limit. This was likely to require additional Rules that accommodate the needs of those units which may need to operate outside the limits.

With respect to stakeholder concerns as to how the AER may monitor and enforce compliance with the technical limitations imposed by the Rules, the Commission noted that the AER has published an AER Compliance and Enforcement – Statement of Approach. The Statement of Approach states that:

*“The AER aims to work co-operatively with participants to assist them to understand their obligations under the NEL, NER and associated regulations and to develop appropriate compliance programs. Fostering co-operation and voluntary compliance is discussed in chapter 5 of the Statement of Approach. Chapter 5 notes that informing participants about the AER's approach to its monitoring, compliance and enforcement activities will help to foster a cooperative approach and encourage voluntary compliance. A responsible and cooperative approach on the part of participants will help to minimise the intensity and intrusiveness of the AER's monitoring, compliance and enforcement activities. The AER welcomes the*

*opportunity to address any questions participants might have regarding compliance with their obligations.”*

The Rules require that the monitoring processes adopted by the AER are amongst other things, consistent over time and cost reflective. In light of the small number of occurrences, the complexity that could result in the Rules for accommodating different conditions, and the fact that the AER would adopt a pragmatic approach to compliance, the Commission believed that clarification that market ancillary service parameters should reflect plant’s technical capability would be sufficient.

#### **A.10.4 The Commission’s Draft Decision**

The Commission decided to clarify the proposed clause 3.8.7A(m) of the Rules that market ancillary service rebids made under clause 3.8.22 of the Rules must represent technical characteristics at the time of dispatch. The Commission decided not to establish limits for the minimum and maximum enablement points.

#### **A.10.5 Second Round Submissions**

There were no second round submissions.

#### **A.10.6 The Commission’s Final Decision**

The Commission confirms its draft decision.

### **A.11 Dispatch Inflexibility**

#### **A.11.1 The AER’s proposal**

The AER’s proposal would permit generators to declare themselves “inflexible” only when plant technical constraints justify such a declaration.

#### **A.11.2 Submissions**

None of the submissions identified any specific issues in relation to the AER’s proposed Rule change on this aspect.

#### **A.11.3 The Commission’s Assessment and Draft Decision**

The Commission considered that requiring relevant scheduled generators and market participants to declare themselves “inflexible” only when plant technical constraints justify such a declaration would improve the market’s ability to deliver competitive outcomes and provide NEMMCO with the flexibility to manage events for the safe and secure operation of the power system. The Commission decided to include the AER’s proposed Rule change in the draft Rule.

#### **A.11.4 Second Round Submissions**

There were no second round submissions on this matter.

#### **A.11.5 The Commission's Final Decision**

The Commission confirms its draft decision.

### **A.12 Semi-Scheduled Generators - Dispatch Offers**

#### **A.12.1 First Round Submissions**

NEMMCO submitted comments in relation to the ramp rates of Semi-Scheduled Generators as contained in Schedule 2 of the National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2008 No. 2 (the "Central Dispatch Rule").

NEMMCO noted that the Commission's final Rule determination on the Central Dispatch Rule stated that ramp rate limits would be included for Semi-Scheduled Generators. However clause 3.8.6(g) of the Rules which specifies the contents of a dispatch offer for a Semi-Scheduled Generator did not include ramp rates. NEMMCO contended that this was an omission and proposed amending clause 3.8.6(g) of the Rules to include ramp rates as part of this Rule change.

#### **A.12.2 The Commission's Analysis and Reasoning**

In its Final Determination on the Central Dispatch Rule, the Commission's policy position was for ramp rate limits to be included for Semi-Scheduled Generators. The Commission considered that amending clause 3.8.6(g) of the Rules as proposed by NEMMCO would clarify the Commission's policy position as outlined in its Final Determination on the Central Dispatch Rule.

#### **A.12.3 The Commission's Draft Decision**

The Commission decided to amend clause 3.8.6(g) of Schedule 2 of the Central Dispatch Rule to include ramp rate.

#### **A.12.4 Second Round Submissions**

There were no second round submissions on this matter, however NEMMCO suggested that clause 3.8.3A(a)(2) of the Rules be amendment to include clause 3.8.6(g) of the Rules when the Schedule 2 of the Central Dispatch Rule commences operation.



### **A.12.5 The Commission's Final Decision**

The Commission confirms its draft decision and has amended clause 3.8.3A(a)(2) of the Rules to also refer to clause 3.8.6(g) of the Rules when Schedule 2 of the Central Dispatch Rule commences operation.

## **A.13 Semi-Scheduled Generators – Rebidding Ramp Rates**

### **A.13.1 First Round Submissions**

NEMMCO submitted comments in relation to the ramp rates of Semi-Scheduled Generators as contained in Schedule 2 of the Central Dispatch Rule.

NEMMCO noted that clause 3.8.22(b) of the Rules that relates to rebidding did not include semi-scheduled generating units. NEMMCO submitted that semi-scheduled generating units should be included otherwise Semi-Scheduled Generators would not be able to rebid available capacity, dispatch inflexibilities, or ramp rates.

### **A.13.2 The Commission's Analysis and Reasoning**

In its Final Determination on the Central Dispatch Rule, the Commission's policy position was for Semi-Scheduled Generators to be able to rebid available capacity, daily energy constraints, dispatch inflexibilities and ramp rates. The Commission considered that applying clause 3.8.22(b)(1) of the Rules to Semi-Scheduled Generators would clarify the Commission's policy position as outlined in its Final Determination on the Central Dispatch Rule.

### **A.13.3 The Commission's Draft Decision**

The Commission decided to amend clause 3.8.22(b)(1) of the Central Dispatch Rule to permit Semi-Scheduled Generators to rebid available capacity, daily energy constraints, dispatch inflexibilities and ramp rates.

### **A.13.4 Second Round Submissions**

There were no second round submissions on this matter.

### **A.13.5 The Commission's Final Decision**

The Commission confirms its final decision.

## **A.14 Semi-Scheduled Generators – Ramp Rates, Market Ancillary Service Offers and Dispatch Inflexibility**

### **A.14.1 Commission’s Considerations**

The Commission noted that the AER’s Rule change proposal did not consider the application of the Rule to Semi-Scheduled Generators as contained in Schedule 2 of the Central Dispatch Rule that is scheduled to commence operation on 31 March 2009.

The Commission considered that issues that have been identified by the AER for Scheduled Generators, Market Participants with generating units, scheduled network services and/or scheduled loads were also relevant for Semi-Scheduled Generators in the event of a binding network constraint. Bidding and rebidding of technical parameters such as ramp rates, market ancillary service offers, and dispatch inflexibility by Semi-Scheduled Generators in the manner outlined by the AER in its Rule change proposal could also inhibit NEMMCO’s ability to reduce the output of generators through central dispatch to manage system security.

For this reason, the Commission considered that the AER’s proposed Rule change should also apply to Semi-Scheduled Generators.

### **A.14.2 The Commission’s Draft Decision**

The Commission decided to amend the AER’s proposed Rule change to include Semi-Scheduled Generators in addition to Scheduled Generators, Market Participants with generating units, scheduled network services and/or scheduled loads when the Central Dispatch Rule commences operation.

### **A.14.3 Second Round Submissions**

There were no second round submissions on this matter.

### **A.14.4 The Commission’s Final Decision**

The Commission confirms its draft decision.