

**Australian Competition & Consumer Commission**



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11 July 2001

**Applications for authorisation of National Electricity Code Changes –  
Ancillary services amendments (A90742 – A90744)**

On 23 August 2000, the Australian Competition and Consumer Commission (Commission) received applications for authorisation (Nos A90742, A90743 and A90744) of amendments to the National Electricity Code (Code). The applications were amended on 2 November 2000.

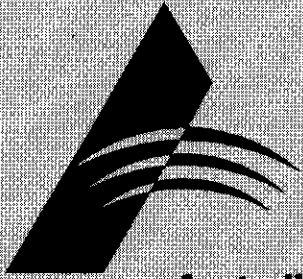
Enclosed is a copy of the Commission's determination in respect of these applications for authorisation. The Commission's determination outlines its analysis and views on the proposed Code changes. The Commission proposes to grant authorisation, conditional upon a number of amendments to the Code being made. A list of the conditions is outlined in section 7 of the determination.

In accordance with s.101 of the *Trade Practices Act 1974* a person dissatisfied with the Commission's determination may apply to the Australian Competition Tribunal for a review of the determination. Each application must be lodged on the appropriate form within 21 days of the date of the determination, with the Registrar of the Tribunal. The Tribunal is located in the Office of the Registrar of the Federal Court in each State.

A copy of this letter together with the determination will be placed on the Public Register kept by the Commission.

Michael Rawstron  
General Manager  
Regulatory Affairs – Electricity





**Australian  
Competition &  
Consumer  
Commission**

# **Determination**

## **Applications for Authorisation**

### **National Electricity Code**

#### **Ancillary Services Amendments**

**Date: 11 July 2001**

**Authorisation nos:**

A90742  
A90743  
A90744

**File nos:** C2000/1371-73

**Commissioners:**

Fels  
Shogren  
Bhojani  
Cousins  
Jones  
Martin

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## Glossary

AC	Alternating current
AGC	Automatic generation control
ASRG	Ancillary Services Reference Group
CCP	Code Change Panel
Code	National Electricity Code
Commission	Australian Competition and Consumer Commission
EMEAL	Edison Mission Energy Australia Limited
Ergon	Ergon Energy (Victoria) Pty Ltd and Ergon Energy Pty Ltd
EUAA	Energy Users' Association of Australia
FCAS	Frequency control ancillary services
Hedging	protecting against, or reducing, the risk of exposure to variations in the market clearing price
Hz	Hertz – unit of frequency measurement
IES	Intelligent Energy Systems
ITT	Invitation to Tender
LECG	Law and Economics Consulting Group
MSORC	Market and system operator review committee
MW	Megawatt
MWh	Megawatt per hour
NCAS	Network control ancillary services
NECA	National Electricity Code Administrator
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company Ltd
NGF	National Generators' Forum
NRF	National Retailers' Forum
NSP	Network service provider
PJM	Pennsylvania, New Jersey, Maryland electricity market
QNI	Queensland - New South Wales Interconnector
SCADA	Supervisory control and data acquisition system
SECV	State Electricity Commission of Victoria
Southern Hydro	Southern Hydro Partnership
SRAS	System restart ancillary services
TNSP	Transmission network service provider
TPA	Trade Practices Act 1974
VoLL	Value of Lost Load (maximum price)

# 1. Introduction

## 1.1 The applications

On 23 August 2000, the National Electricity Code Administrator (NECA) lodged applications for authorisation (A90742, A90743, and A90744) of changes to the National Electricity Code (Code) to enable the introduction of new ancillary services arrangements. The applications were submitted by NECA on behalf of itself, the National Electricity Market Management Company (NEMMCO) and Code participants in the National Electricity Market (NEM).

The proposed ancillary services arrangements introduce a market based system for procurement of ancillary services, and where possible, introduce a 'causer pays' regime for cost allocation amongst market participants. These changes include:

- a transitional market for frequency control ancillary services – featuring 8 one way markets, setting a clearing price for 8 frequency control services;
- ongoing contract markets for network control and system restart ancillary services; and
- ongoing development of ancillary service arrangements such as two way markets in frequency control ancillary services and the introduction of network control ancillary service markets.

At the time the original applications were lodged, NECA requested the Australian Competition and Consumer Commission (Commission) to also grant interim authorisation to an interim frequency control ancillary service (FCAS) markets, and other provisions, to enable the new arrangements to be implemented prior to 31 December 2000. However, on 2 November 2000, NECA wrote to the Commission advising of an amendment to the applications in respect of the proposed interim market arrangements for FCAS. In particular the request for interim authorisation was withdrawn, and amendments to the Code required solely for the implementation of the interim FCAS market were also withdrawn from the application.

## 1.2 Statutory test

The applications were made under sub-sections 88(1) and 88(8) of the *Trade Practices Act 1974* (TPA).

Applications made under sub-section 88(1) of the TPA are for authorisation to make a contract or arrangement, or arrive at an understanding, a provision of which would have the purpose, or would or might have the effect, of substantially lessening competition within the meaning of section 45 of the TPA; and to give effect to a provision of a contract, arrangement or understanding where the provision is, or may be, an exclusionary provision within the meaning of section 45 of the TPA. Further sub-section 88(6) provides that an authorisation made under sub-section 88(1) has effect as if it were also an authorisation in the same terms to every other person named or referred to in the application.

Applications made under sub-section 88(8) of the TPA are for authorisation to engage in conduct that constitutes, or may constitute, the practice of exclusive dealing in accordance

with the provisions of section 47 of the TPA. Further, sub-section 88(8AA) provides that where authorisation has been granted under sub-section 88(8) and this particular conduct is expressly required or permitted under a code of practice, the authorisation applies in the same terms to all other persons named or referred to as a party or proposed party to the code. Authorisations may also apply to any corporation who becomes a party in the future.

The TPA provides that the Commission shall only grant authorisation if the applicant satisfies the relevant tests in sub-sections 90(6) and 90(8) of the TPA. While sub-section 90(6) and sub-section 90(8) relate to different types of anti-competitive behaviour, the tests are essentially the same.

Sub-section 90(6) provides that the Commission shall grant authorisation only if it is satisfied in all the circumstances that:

- the provisions of the proposed contract, arrangement or conduct would result, or be likely to result, in a benefit to the public; and
- that benefit would outweigh the detriment to the public constituted by any lessening of competition that would, or would be likely to result from the proposed contract, arrangements or conduct.

Sub-section 90(8) provides that the Commission shall grant authorisation only if it is satisfied in all the circumstances that the proposed provision or conduct would result, or be likely to result, in such a benefit to the public that the proposed contract, arrangement, understanding or conduct should be allowed.

The detriment to be considered is limited to detriment caused by a lessening of competition. However, consideration of public benefits is less restricted and public benefits recognised in the past include:

- fostering business efficiency;
- industry rationalisation;
- promotion of industry cost savings;
- promotion of competition in industry;
- promotion of equitable dealings in the market;
- expansion of employment;
- development of import replacements;
- growth in export markets; and
- arrangements which facilitate the smooth transition to deregulation.

In considering whether or not to grant authorisation the Commission must consider what the position is likely to be in the future if authorisation is granted and what the future is likely to be if authorisation is not granted.

If the Commission determines that the public benefits do not outweigh the detriment to the public constituted by any lessening of competition, the Commission may refuse authorisation or grant authorisation subject to conditions.

The value of authorisation for the applicant is that it provides protection from action by the Commission or any other party for potential breaches of certain restrictive trade provisions of the TPA. It should be noted, however, that authorisation only provides exemption for the particular conduct applied for and does not provide blanket exemption from all provisions of the TPA. Further, authorisation is not available for misuse of market power (section 46).

For more detail about the Commission's authorisation process and the statutory test that the Commission applies please see: *Guide to authorisations and notifications*, Australian Competition and Consumer Commission, November 1995.

### **1.3 Public consultations**

On 23 August 2000, NECA lodged applications for authorisation of the proposed ancillary services amendments to the Code with the Commission. The Commission commenced its public consultation process by advertising a request for submissions in the *Weekend Australian* of 26-27 August 2000. The request for submissions was also placed on the Commission's web page.

Comments were invited concerning any public benefits and anti-competitive detriment that might arise out of the proposed Code changes. Interested persons were advised that copies of the proposed amendments were available on NECA's web page. Eight submissions were received and these were placed on the Commission's public register.

NECA notified the Commission of amendments to the application on 2 November 2000. The Commission extended the consultation period, by writing to those interested parties that had already lodged a submission, and by placing a notice on the Commission's web page on 8 November 2000. The consultation period was extended until 1 December 2000. A further 8 submissions were received, and placed on the Commission's public register.

The draft determination was released on 2 April 2001, and Integral Energy (Integral) requested that the Commission hold a pre-determination conference (PDC) in response to the draft determination. The conference was held on 3 May 2001 in Canberra, and interested parties were given a further opportunity to make submissions. A further 12 submissions were received.

The Commission contracted Intelligent Energy Systems (IES) to review the likely changes in risk for market participants under the proposed new FCAS markets. The report is available on the Commission's web site. The Commission also contracted Robert Outhred to provide advice on technical elements of the proposed Code changes and sought further input from NECA, NEMMCO, retailers and generators.

A list of interested parties that made submissions is at Attachment A.

### **1.4 Commission processes**

The Commission has produced this determination outlining its analysis and views on the proposed Code changes according to the statutory assessment criteria set out in section 1.2. Any person dissatisfied with this determination may apply to the Australian Competition Tribunal for its review.



## 2. Background

### 2.1 What are ancillary services?

Ancillary services are essential for the management of power system security, facilitate trading in the NEM, and ensure that electricity supplies are of an acceptable quality. NEMMCO controls key technical characteristics of the system, such as frequency and voltage, through ancillary services. Ancillary services can also be used to increase the efficiency of trade in the NEM. However, ancillary services are procured separately from energy and should be paid for separately from energy.

Ancillary services can be defined as those services that provide for the power system security, quality of supply and enhanced spot market trading benefits that would not be voluntarily provided by market participants on the basis of energy prices alone.<sup>1</sup> Three broad groups of ancillary services are considered in the proposed arrangements:

- **Frequency Control Ancillary Services (FCAS)** - Ancillary services concerned with balancing power supply and demand over short time intervals throughout the system. Tools for managing frequency deviations include governor controls, synchronous motors, automatic generation controls and load shedding;
- **Network Control Ancillary Services (NCAS)** - Ancillary services concerned with maintaining and extending the operational efficiency and capability of the network within secure operating limits. Tools for managing the network include synchronous condensers, static var compensators, series capacitors, excitation controls, power system stabilisers, and transformer taps; and
- **System Restart Ancillary Services (SRAS)** - Ancillary services concerned with recovery from a partial or total power system failure. System restart requires generators to be able to restart themselves without external power from the grid and then be capable of providing power to other generators in order to assist other generating units to start.

Greater detail regarding the technical nature of ancillary services can be found in the Invitation to Tender (ITT) documents issued by NEMMCO in October 2000. These documents are available on the NEMMCO web site, [www.nemmco.com.au](http://www.nemmco.com.au).

### 2.2 Ancillary service costs

Ancillary services procured by NEMMCO cost around 5% of the value of the energy market in the calendar year 2000. However, this cost estimate may understate the total cost of ancillary services provided to the market, as transmission network service providers (TNSPs) and generators provide some NCAS services that aren't procured by NEMMCO.

Table 2.1 below sets out the approximate costs of ancillary services in the NEM in the year 2000. The cost are separated between the Southern regions (New South Wales, Snowy, Victoria and South Australia) and the Queensland region as NEMMCO sourced ancillary

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<sup>1</sup> Ancillary Services Review Report – phase 1, IES and ASRG, October 1999, p2

services in both areas to take into account the lack of interconnection between Queensland and New South Wales.

**Table 2.1 Ancillary service costs\*, year 2000**

	Ancillary Service – Energy	\$Millions	% Total AS	% Energy Costs
Southern	FCAS*	89.8	61.7	2.0
	NCAS*	47.6	32.7	1.0
	SRAS	8.1	5.6	0.2
	TOTAL AS	145.6	100.0	3.0
	Energy	4813.9	-	-
Queensland	FCAS*	105.1	94.5	4.5
	NCAS*	2.1	1.9	0.1
	SRAS	4.0	3.6	0.2
	TOTAL AS	111.2	100.0	4.0
	Energy Qld	2335.0	-	-
NEM total	FCAS*	194.9	75.9	2.7
	NCAS*	50.0	19.5	0.7
	SRAS	12.0	4.7	0.2
	TOTAL AS	256.8	100.0	3.6
	Energy NEM	7148.9	-	-

Since the Queensland New South Wales Interconnector (QNI) began operating in February 2001, NEMMCO has been able to source FCAS for the whole of the interconnected system. Data on the costs of operating in that environment are shown in Table 2.2.

**Table 2.2 Ancillary service costs\*, week 7 2001 – week 21 2001**

	Ancillary Service – Energy	\$Millions	% Total AS	% Energy Costs
Total	FCAS*	20.3	50.0	1.2
	NCAS*	16.7	41.1	1.0
	SRAS	3.6	8.9	0.2
	TOTAL AS	40.6	100.0	2.4
	Energy	1692.4	-	-

There has been a decrease in weekly FCAS costs of around \$400,000 since the commissioning of QNI, while weekly costs for NCAS and SRAS have remained approximately the same. Total ancillary service costs have fallen to around 2.4% of energy costs since the commissioning of QNI.

\* Ancillary service costs are calculated on the same basis for both Table 2.1 and Table 2.2. There is not an exact mapping between the specification of ancillary services procured under contract in 2000, and the proposed classification of ancillary services into FCAS, NCAS and SRAS. Load shedding, which is used for both FCAS and NCAS, has been attributed (50/50) to the categories FCAS and NCAS in the estimates above. The data on ancillary service costs is available on NEMMCO's web site, ancillary service costs. The estimates of the value of energy are derived from NEMMCO's regional summary reports.

## 2.3 Review process

The Code, as authorised by the Commission in December 1997, included a requirement upon NEMMCO to conduct a review into the options for market based provision of ancillary services. The review process included the formation of the ancillary service reference group (ASRG) with representation from Code participants, NEMMCO, NECA and the Commission (observer). The ASRG process led to the commissioning of reports regarding introducing market based arrangements for ancillary services, and development of a framework for determining who should pay for ancillary services. IES was employed to produce those reports.<sup>2</sup>

NEMMCO presented the review findings and recommendations in a report to NECA in October 1999, and subsequently proposed Code changes, which were lodged with NECA in December 1999.

Key outcomes of the review process include:

- the introduction of 8 FCAS spot markets;
- escalating price caps for each of the proposed FCAS markets;
- NEMMCO to act as the sole purchaser of ancillary services;
- causer pays charging to be introduced where possible; and
- contract based procurement of NCAS and SRAS.

NECA's Code Change Panel (CCP) then commenced a consultation process on the changes. The CCP recommended a number of changes to the proposed arrangements including:

- the introduction of interim FCAS market arrangements to allow for a trial of the 8 FCAS markets;
- removal of the price caps in the FCAS markets;
- the introduction of arbitration procedures for resolving contract disputes in respect of NCAS and SRAS;
- incorporating the principles developed by the ASRG into the Code; and
- amending the causer pays provisions to allow market customers to opt to be treated in the same manner as scheduled participants for FCAS allocation and providing for a period of fixed user pays FCAS cost allocation for the first 6 months of FCAS market operations.

NECA lodged the applications for authorisation with the Commission in August 2000. However, by October 2000 it was apparent that the interim arrangements would not be able to be introduced prior to the expiry of the existing ancillary service arrangements on 31 December 2000. Consequently, NECA amended the applications to remove the interim

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<sup>2</sup> The reports of the ASRG and IES are available on the NEMMCO web site, [www.nemmco.com.au](http://www.nemmco.com.au).

market for FCAS and at the same time, separate applications were lodged with the Commission in respect of the required changes to the Code to allow for an extension of the Chapter 9 ancillary service arrangements.<sup>3</sup> The applications regarding the Chapter 9 arrangements were granted interim authorisation on 29 November 2000, and are subject to a separate authorisation process by the Commission.

The Code changes being considered in this determination also provide for a further review of ancillary service arrangements including FCAS markets (specifically the introduction of two-way markets) and the potential for introduction of more market based arrangements for NCAS. The proposed Code changes specify the review is to be undertaken by NEMMCO after the new ancillary services arrangements are implemented, and a report published before 30 November 2001. The content and timing of the review is discussed in more detail in section 3.6 of this determination.

### **2.3 International arrangements**

International comparisons for ancillary services are difficult because of differing definitions and arrangements within other electricity markets. However, the Energy Users Association of Australia (EUAA) has put together a summary table, which is reproduced in Appendix B.

The table quite clearly demonstrates that other markets have quite different approaches to ancillary services, including the way in which services are defined, procured and dispatched. However, the underlying physical characteristics of the relevant energy markets will impact on the evolution of market arrangements and the options available for ancillary service markets. This issue is discussed further in reference to FCAS in section 3.5 of this determination.

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<sup>3</sup> The applications amend Schedule 9G and clause 9.35.7 of the Code. Application nos: A90762 – A90764.

### 3 Frequency control ancillary services

The frequency of the system is nominally 50Hz. The frequency will fluctuate if the system gets out of balance - that is electricity being put into the system (generation) does not match the electricity being taken out of the system (load). The frequency will fall if there is insufficient generation to match load and rise if there is excess generation. Frequency is maintained within the band of 49.5-50.5Hz, and there is a danger of consequential loss of generation units, limiting NEMMCO's ability to respond to further contingencies, if the frequency is allowed deviate outside of the specified band by large amounts and/or for sustained periods of time. In the extreme, a large fluctuation in frequency could result in system collapse.

In reality the frequency is continually fluctuating, as the system responds to changing demand and supply conditions. Under the NEM arrangements, demand and supply will balance for each 30 minute trading period but it is necessary to have some way to manage the balancing of the system within each 30 minute trading period. FCAS enables NEMMCO to manage deviations from the nominated frequency of 50Hz, by arresting major fluctuations in the frequency and restoring the system frequency to 50Hz in response to major and minor fluctuations in frequency within specified time frames.

In the year 2000, FCAS accounted for over 75% of total ancillary service costs.<sup>4</sup> Of this cost, regulation services represent the bulk of the costs, around 67% of FCAS costs. Since interconnection with Queensland these costs have fallen to around 50% of total ancillary service costs, generally less than \$1.5million per week.<sup>5</sup>

#### 3.1 Proposed arrangements

The proposed Code changes introduce 8 spot markets for different components of FCAS:

- contingency services<sup>6</sup> – 6 second raise/lower;
  - 60 second raise/lower;
  - 5 minute raise/lower; and
- regulation services<sup>7</sup> – raise/lower.

In each market, clearing prices will be set for each dispatch interval (5 minutes), to apply to all providers within a region. Prices will be determined through the dispatch algorithm, and will be calculated to ensure that providers of both energy and FCAS are indifferent to actual combination of energy and FCAS scheduled. That is, the prices for each FCAS service include an element of opportunity cost, to ensure providers are indifferent to using their equipment to provide either energy or FCAS.

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<sup>4</sup> Refer to Table 2.1.

<sup>5</sup> Refer to Table 2.2.

<sup>6</sup> Contingency services are also known as large deviation FCAS or fast, slow and delayed raise and lower services, respectively.

<sup>7</sup> Regulation services are also known as small deviation FCAS, or continuous services.

Payments to service providers will be based on enablement of FCAS rather than actual use. The energy market will be co-optimised with each of the 8 FCAS markets to maximise the net benefits of trade. The dispatch arrangements allow for bidding and rebidding in the FCAS markets to be undertaken on a similar basis to the energy market. However, participants in both the energy and FCAS markets are able to rebid their FCAS in circumstances where the dispatch algorithm would otherwise consider the providers unable to supply FCAS.

NEMMCO will be the sole purchaser of FCAS on behalf of market participants, and the costs will be allocated to market participants on a causer pays basis, where causers can be measured.

NEMMCO will use supervisory control and data acquisition (SCADA) data to measure deviations from generator dispatch targets to determine the contribution of each generator to the need for regulation FCAS. Costs will be allocated proportionately to causers, with NEMMCO recovering the remainder, representing load forecast error, from market customers. Market customers may opt to install SCADA metering equipment and have regulation FCAS costs allocated as per generator participants.

Costs of contingency FCAS are apportioned 100% to customers for lower services and 100% to generators for raise services.

NEMMCO will purchase and dispatch FCAS in accordance with the system security requirements specified by the Reliability Panel.

The Code changes also set out a requirement for testing of the proposed market environment prior to its introduction. The extension of the Chapter 9 ancillary service arrangements allows for the continuation of contract based procurement of FCAS until the introduction of the new market based arrangements.<sup>8</sup>

### **3.2 Issues for the Commission**

The centralised procurement of FCAS through the proposed spot markets, the requirement for NEMMCO to specify minimum technical standards and the requirement for NEMMCO to only procure FCAS from Code participants may be taken to be:

- Exclusive dealing provisions, as participants trade in the NEM on the basis that NEMMCO will only procure FCAS from Code participants; or
- Price fixing provisions to the extent that participants are agreeing that a particular pricing mechanism be used to determine prices; or
- Exclusionary provisions to the extent that competing participants agree not to trade with other persons except through the spot market; or
- Provisions substantially lessening competition, where the technical requirements and other NEM entry requirements create a barrier to entry to the FCAS market or decreases competition in the FCAS market.

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<sup>8</sup> The Chapter 9 ancillary service arrangements expire on or before 31 August 2001.

### **3.3 What the applicant says**

NECA recognises that the proposed arrangements for 8 FCAS market are complex and will increase transaction costs in comparison to existing arrangements, but considers the increased transaction costs are justified by the increased economic efficiency of the new arrangements. NECA also notes that there is 'significant competition in terms of the number of providers' for FCAS and considers that the degree of competition will increase as the FCAS market is opened to non-generator participants.

In respect of cost allocation NECA notes that the proposed arrangements largely allocate costs to provide participants with incentives to undertake actions that lower costs overall in the NEM.

### **3.4 What the interested parties say**

Tarong Energy states that public benefits arising from the introduction of a spot market for FCAS in the form of reduced barriers to entry and competitive price determination, will outweigh any perceived detriment due to a lessening of competition.

Edison Mission Energy Australia Ltd (EMEAL) states that the proposed arrangements represent a substantial simplification in scheduling dispatch and pricing of FCAS services, and support the introduction of the proposed arrangements.

EnergyAustralia argues that FACS is an essential service and it is not appropriate for it to be procured through commodity type trading.

Many other participants' submissions offer support for the introduction of market based arrangements but have concerns about the specific set of arrangements put forward in the Code changes.

#### ***Complexity***

The EUAA supports the general thrust of NEMMCO's proposals for ancillary services but has concerns about the complexity of the 8 FCAS markets. The EUAA states there is a degree of arbitrariness about the way NEMMCO has defined discrete market products and services and the FCAS market proposals are far more complex than anything used in electricity markets in the United Kingdom, New Zealand, and the United States.

The EUAA believes that this complexity is likely to create barriers to entry for the demand-side and embedded generation. The demand-side is the most likely source of new entrants in the short to medium term and new entry is likely to be necessary to moderate market power abuse in periods of severe system stress, even though it cannot completely offset generator market power in providing ancillary services.

The EUAA also states that NEMMCO should be required by the Commission, before it authorises these proposals, to present a reasonable cost-benefit analysis, including estimates of costs incurred by all market participants, and estimates of cost-benefits that end-users might expect. In addition, the EUAA argues the Commission should request NEMMCO to produce a detailed implementation plan that reasonably demonstrates its proposals are practicable.

Macquarie Generation recognises that the introduction of FCAS markets could increase allocative efficiency, and potentially encourage technical efficiency. However, Macquarie Generation does not consider that the proposed 8 FCAS markets will realise the potential benefits, due to the complexity of the arrangements. Macquarie Generation argues that the complexity of 8 FCAS markets will increase transactions costs and restrict participation in the markets, and further will reduce the liquidity and depth of potential hedge markets that may develop. Further, Macquarie Generation queries whether other markets use real time dispatch and settlements arrangements.

Macquarie Generation proposes an alternative model for FCAS markets, consisting of 3 FCAS markets:

- contingency services – automatic response;
- contingency services – maximum change to output or consumption in 5 minutes; and
- regulation services.

Macquarie Generation considers that such a model would simplify bidding and hedging arrangements, reducing transaction costs and increase the liquidity of the hedging markets.

EMEAL considers the proposed arrangements are simpler, easier to understand and more transparent than the current contract arrangements or the arrangements in the earlier State based markets. EMEAL argues that as NEMMCO is currently operating 9 FCAS markets using technology specific service definitions, the proposed 8 FCAS market arrangements are a simplification.

### *Degree of competitiveness*

The EUAA, Integral and the NRF raise concerns about the likely degree of effective competition in the proposed FCAS markets.

Integral argues for a continuation of the current arrangements, modified to ensure more competitive outcomes in the energy and FCAS markets.

The EUAA and Integral also argue the Commission should ensure that effective market monitoring and market power mitigation measures be developed and implemented as a matter of urgency. The EUAA states that the Pennsylvania-New Jersey-Maryland (PJM) Market Monitoring Unit focuses on analysis and detection of market design flaws and place far greater emphasis on market power issues. The EUAA is of the view that the existing NEM market monitoring and surveillance measures are outdated and inadequate but notes that NECA will undertake a review of existing NEM measures as a condition of authorising an increase in the value of lost load (VoLL).

The EUAA suggests that without demand side participation in any part of a proposed FCAS market, it will be more difficult to get sufficient competition to mitigate generator market power. This is so particularly under conditions of high peak system load and inter-regional constraint, when it is almost certain that little capacity and fewer providers will ensure high-cost FCAS. The EUAA considers that there are not enough players in the NEM compared to the United States and United Kingdom markets, in particular, to guarantee a competitive market, especially if there are barriers to entry for the demand-side and embedded generation.



EUAA recommends the following actions to ensure the effectiveness of the markets:

- establish an effective and well-resourced market monitoring function and encourage significant involvement from the demand-side; and
- Facilitate access to demand management infrastructure.

The EUAA argues that increased demand side representation will require action to:

- lower the costs of registering and participating in the NEM as an *Ancillary Services Provider*, including lower prudential requirements for this category of participant and implementing the Code changes emerging from NECA's demand-side participation review;
- remove retail market impediments to demand management, including consistency in policy in regulation between jurisdictions, changing the perceptions and understandings of end-use customers and retailers, and encouraging use of hot water load;
- provide incentives for NSPs to offer demand management services through changes in tariff setting priorities and policies;
- move towards network pricing and regulation policies that support demand management, including congestion pricing, market-based assessment of network augmentation, clear pricing principles and information disclosure;
- improve the opportunities for stronger transmission links to be built in the NEM, which will have an impact on forcing competitive provision of ancillary services;
- change wiring rules and regulations to require separation of loads; and
- introduce facilities to deliver price signals to all customers (eg interval meters).

EMEAL notes that the new arrangements reduce the barriers to entry in comparison to the existing arrangements, where potential providers are locked out of the market after the ITT has concluded.

### ***Risk management***

EnergyAustralia has concerns about the ability of market participants to hedge FCAS costs, noting the generators do not have the same incentive to offer hedges in the FCAS market as they do in the energy market. EnergyAustralia doubts that market based hedging solutions will be made available and does not support the development of the 8 FCAS sub-markets. Further, EnergyAustralia considers that there has been no clear demonstration that the economic benefits attributable to the new arrangements are sufficient to justify the start up costs and increased transaction costs.

EnergyAustralia also notes that the energy market is unlikely to provide adequate hedging for ancillary service risk as it is not clear that the proposed FCAS markets will mirror the energy market.

The NRF states that market indications are that only limited hedges are likely to be offered by generators, and that any such hedges are likely to be linked to energy market hedges,

effectively making non-coincident high ancillary service prices unhedgeable. The NRF states that:

... market and market participant uncertainty; price uncertainty under the new arrangements; the lack of competition in certain industry sectors and the tight supply demand balance in certain NEM regions, are likely to contribute to reduced market liquidity and stifle the development of hedging activity.

Further the NRF considers that the introduction of the 8 FCAS markets may reduce the availability of energy hedges and secondary market liquidity, especially in the short term.

Tarong Energy states that despite being publicly identified by NECA as a significant provider of ancillary services, they have not been approached by any parties about the availability of hedge contracts for FCAS. Further, Tarong Energy states that it intends to offer hedge contracts for FCAS when a functioning spot market for these products has been established.

### ***Cost allocation***

Southern Hydro Partnership (Southern Hydro) supports the overall market proposals but argues the cost allocation in respect of FCAS contingency raise services should not be allocated on the basis of energy. Southern Hydro states that because small and distributed generators will not impact on such frequency deviations, they should not be included in the cost allocation, and to do so will impact on the viability of such plant. Southern Hydro suggests that contingency FCAS costs should be allocated on a causer pays basis similar to that used for regulation FCAS.

Tarong Energy, Loy Yang Power and Hazelwood Power (Hazelwood) have concerns regarding the cost allocations for contingency FCAS (contingency raise services), as discussed in the National Generators' Forum (NGF) submission to NECA. In particular, the NGF notes that frequency fluctuations occur due to load switching, in particular hot water load, and argues that the cost should take into account the probabilistic nature of the cause of the requirement. Further they argue that network service providers (NSPs) should also be included in the range of potential causers of contingency FCAS, and hence should also be expected to bear some of the costs.

In respect of regulation FCAS, Loy Yang Power supports the establishment of spot markets but reserves its support for the cost allocation proposal until the proposed use of SCADA data to measure causers and hence allocate costs is demonstrated to be suitable.

Hazelwood argues that generators should not be allocated any costs for regulation FCAS, as the underlying cause is changes in load, beyond the control of generators, rather than the lack of generator response to changes in load. Hazelwood also states that the Code includes procedures for generators that do not respond to loading changes, which are a sufficient incentive on generators to conform to dispatch instructions.

The NRF also considers the use of SCADA data for calculating historical deviation factors is unproven, and the proposal to use a fixed historical calculation will also introduce unacceptable distortions to the price signals.

The NRF supported the cost allocation proposals put forward by the EUAA to NECA, wherein higher costs are placed upon those causers that can affect the outcome of the service provided. Further, both the NRF and the EUAA would like to see NSPs included in the cost

allocation, in recognition of the impact that network outages and trips can have on the need for and cost of ancillary services.

The EUAA's submission sets out an alternative cost allocation methodology, as follows:

Type of Ancillary Service	NECA proposal		EUAA proposal		
	Generator	Customer	Generator	TNSPs	Customer
Regulation FCAS	Causers	Causers/ Residue*	Causers plus 1/3 <sup>rd</sup> residue	Causers plus 1/3 <sup>rd</sup> residue	Causers plus 1/3 <sup>rd</sup> residue
Contingency FCAS (raise)	100%	0%	100%	0%	0%
Contingency FCAS (lower)	0%	100%	40%	40%	20%
NCAS (TNSP)	0%	100%	50%	0%	50%
NCAS (mandatory)	0%	100%	50%	50%	0%
NCAS (NEMMCO)	0%	100%	40%	40%	20%
SRAS	50%	50%	100%	0%	0%

\* The NECA proposal allows for customers to 'opt in' as measured causers, and install the necessary metering required for measurement of their contribution to the need for regulation FCAS. The residue, calculated as the remaining costs after all the measured causers' contributions and costs are allocated, is recovered from all market customers that choose not to 'opt in' as measured causers.

#### **Other issues**

The NRF states that it recognises the potential benefits from the introduction of market based arrangements but has concerns regarding a number of issues in the proposed Code changes. Some of the concerns the NRF raises are as follows:

- FCAS prices are set for each dispatch interval (5 minutes) rather than each trading interval (30 Minutes), whereas energy prices are set for trading intervals;
- frequency standards are too onerous;
- a price cap should be introduced for the first 2 years of the FCAS market, at \$300/MWh to offset the risks arising due to market immaturity, and a lack of risk management tools. A review of the availability of hedges should be conducted after 18 months and the outcome of the review should be used to determine whether or not the price cap is retained;
- rebidding of FCAS may be encouraged, and there are no provisions to monitor or investigate rebidding;
- there are no provisions to deal with market suspension and failure in respect of the FCAS markets, including market suspension, reinstatement, powers of direction, provider of the last resort and market operations when some markets (FACS or energy) are suspended but not all;
- requirement for FCAS bids to apply for a full day; and
- the use of enabling price rather than dispatch price.

Macquarie Generation and Ergon Energy Pty Ltd (Ergon) raise the issue of the implementation plan, and the adequacy of timing allowed for in implementing the proposed markets. Ergon also has concerns about the speed at which any further FCAS market development will be undertaken, in order to achieve the so called 'light on the hill' arrangements.

### **3.5 Issues arising in response to the draft determination**

The PDC clearly demonstrated the polarisation of views that exists between market participants such as Integral, who stated they believe that the proposed FCAS markets should not go forward, and others such as EMEAL, who clearly support the introduction of the FCAS spot markets without further delay. Risk management, the degree of competitiveness and the proposed causer pays cost allocation remain key concerns of interested parties.

#### ***Complexity***

Stanwell Corporation (Stanwell) argues that a specific review timetable should be imposed, to minimise regulatory risk arising from the ongoing review and development of ancillary service arrangements.

NEMMCO notes that the existing clause C3.1.4(a1) imposes an obligation on NEMMCO to review the FCAS markets by 30 November 2001, and supports condition C3.1 removing this requirement.

Origin Energy (Origin) is of the opinion that the costs of introducing the proposed FCAS markets will be higher than forecast and will outweigh any savings to end customers. Origin argues that as FCAS represents less than 5% of the energy market it is not worth the IT and labour costs involved in implementation.

#### ***Competitiveness***

Hazelwood considers that the TPA is a sufficient tool for dealing with market power, and states that no further market power policy is required in the FCAS proposals. Further Hazelwood contends that the existing arrangements themselves act as a deterrent to new entry, and have made it difficult for Hazelwood to participate in the ancillary services markets.

Origin argues that the introduction of the proposed FCAS markets will give rise to a lessening of competition in the energy markets. Origin states that under the current contract based arrangements generators do not have the option of withdrawing capacity from the energy market, and offering it in the FCAS market, unless they have an FCAS contract. Thus the incentive on generators is to bid into the energy market if they wish to earn a return on their output. However, Origin is of the opinion that under the proposed arrangements the incentive is altered, in that generators can earn a return on their output by offering it into the FCAS market, at the same time as withdrawing output from the energy market, and hence increasing energy prices. Origin notes that given the FCAS market represents only 3% of the combined markets, any benefits arising from a fall in FCAS prices (due to the increased capacity in that market) will generally be offset by the increase in prices in the energy market.<sup>9</sup> Origin

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<sup>9</sup> For example, if 50MW of capacity is withdrawn from the energy market, resulting in an energy price increase of \$1, the cost to the market assuming a demand of 20000MW is \$20,000. At the same time that

stresses, that the ability of generators to now receive a return for capacity withdrawn from the energy market will greatly increase the incentive they have to do so.

Origin also argues that the proposed arrangements favour specific technical capabilities (generators fitted with AGC), and as such represent a lessening of competition.

NEMMCO states that the condition imposed to allow NEMMCO to waive fees (C3.2) is unnecessary and may discriminate between new and existing market participants. NECA argues that condition C3.2 should be retracted as it may conflict with the market objective of not discriminating between market participants and persons wishing to enter the market.

The EUAA argues that a competitive tendering process will allow for more competitive outcome than the proposed spot market arrangements. Further, the EUAA reiterates its concern that the definition of 8 FCAS will reduce competition for their provision, and supports a more technical specification of FCAS requirements.

The EUAA also does not consider the market monitoring requirements to be sufficient to protect the market against market power abuse. Integral also raises this point in their submission, suggesting a robust market power policy is required.

### ***Risk management***

Integral notes that there are limited contract currently available and those that are available are not for long enough periods of time.

The NRF argues that it is likely that there will be no hedging available on the first day of trading in the FCAS spot markets. In the environment of uncertainty surrounding the introduction of FRC and default supply arrangements, the NRF claims that the retailers will not be able to assess how much of their costs they can pass on and hence may be exposed to a significant amount of FCAS costs. Further, with hedge cover unlikely to be available at the commencement of the FCAS markets many retailers will be operating in breach of their risk management policies and potentially in breach of Corporations Law.<sup>10</sup>

If the FCAS markets start, then the NRF argues that the issue becomes one of what hedging instruments will develop and in what time frame. The NRF notes that in United States and New Zealand ancillary service markets no hedging activity takes place and considers that may indicate a reluctance on the part of 'Markets' to develop ancillary service hedging instruments. Further the NRF notes that many generators remain unclear about their possible involvement in hedging markets and where involvement is likely the details of any hedging instruments they may bring forward. The NRF also states that the Australian Financial Markets Association is unlikely to develop a standard instrument prior to the proposed start of the FCAS markets, and any such instrument may introduce physical conditions, on what the retailers would prefer to see as a purely financial instrument.

The NRF considers that any hedging markets for FCAS will not be deep or liquid, and in support of this argues that a deep and liquid market in energy risk management products has

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50MW bid into the FCAS market could result in a price fall of \$10, but the if the service requirement is only around 300MW, the benefit derived by the market is only \$3000, far less than the cost of withdrawing the capacity from the energy market.

<sup>10</sup> S588G of Corporations Law – Directors Duty to Prevent Insolvent Trading by a Company.

not developed, despite operating for over 2 years, and the number of players who could offer hedges. Further the NRF states the number of FCAS markets will dilute any potential hedge market.

The NRF argues that there is no evidence that risk management products will develop within a sufficient time frame to allow retailers to manage their FCAS risks. The NRF estimates the potential exposure of retailers to FCAS costs at \$4.65m /hour, when prices reach VoLL. The NRF goes on:

Although this amount alone would have a significant impact on Retailer profit (and create the potential for Retailer collapse in the event of an extended period of VoLL), the high correlation between AS and energy prices (approximately 95% of the time) is likely to result in the VoLL effect being felt simultaneously in the energy market. The inability of a Retailer to obtain an adequate level of hedge cover in the AS markets will only serve to shorten the period of time prior to which a Retailer can be expected to collapse due to a VoLL event.

The collapse of a Retailer will act to trigger the Retailer of Last Resort ('ROLR') Scheme, transferring both the customers and the liability accompanying the customer load (for both energy and AS at high per MWh prices) of the collapsed Retailer to a new Retailer. In circumstances where the new Retailer is likely to also be facing prices at or near VoLL, the risk of systemic Retailer collapse across the NEM is very real and is significantly increased by the proposed AS market structure.

The NRF has put forward a proposal for a risk management scheme that involves NEMMCO combining ancillary service and energy costs at the settlements stage, through the application of a static Ancillary services factor. In doing so, market participants will be able to easily adapt their energy hedge cover to take into account their expected ancillary services costs. (The NRF submission, setting out the detail of the proposal, is available on the Commission's web site.)

Snowy Hydro Trading (SHT) claims that the proposal from the NRF is flawed in that there would be some smearing of price signals between energy and ancillary services, sending inappropriate investment signals in respect of both. Further SHT claims the distortion to the energy price will increase the marginal cost of energy, and that to fix the factor for 6 or 12 months will reduce the incentive on service providers to improve performance.

SHT advocates that a hedge market will evolve with the establishment of the spot market.

Origin notes that intermediate and peaking generators will not participate in a hedge market, as participation in the FCAS market will only be sustainable if they are being dispatched in the energy market.

NECA argues that adequate risk management is essential to prevent cost blowouts and their consequences. NECA notes that the proposed three month testing environment could be interpreted to cover risk management and suggests that the market should not go proceed unless the tests show the market performance will be successful.

Hazelwood argues that the proposed FCAS market will increase participants' ability to hedge FCAS costs relative to the current arrangements, and considers that generators will face the same incentive to offer hedges for ancillary services as they currently do for energy. Further Hazelwood argues that energy hedges could be used as an (imperfect) hedge for FCAS risk, noting that the most volatile component of FCAS costs is the compensation for lost participation in the energy market.

Hazelwood acknowledges that a transitional risk exists at market start, but considers that as the value of the FCAS market is around 3% of the energy market that risk is small, and compares favourably to the alternative risks faced under the current arrangements. Hazelwood does not support the introduction of any transitional arrangements to manage risk or mandate the hedging of risk.

NEMMCO states that it does not want to see market participants exposed to unmanageable risks, which could lead to market failure. However, NEMMCO notes that market participants are already exposed to volatile ancillary service charges that are largely unhedged, and the introduction of the FCAS markets should drive costs down through increased levels of competition.

### ***Cost allocation***

SHT believes that load following generation units should be excluded from the calculation of the causer pays factor.

Hazelwood supports calls for including TNSPs in the FCAS cost allocation.

Stanwell states that as generators can tolerate wider frequency deviations than customers, generators do not derive a benefit from maintaining frequency within the customer tolerance band. As such, Stanwell considers that it is more appropriate to allocate costs to those who derive the benefit – that is customers. Stanwell argues that the causer pays cost allocation is effectively a form of subsidisation and will result in over investment in frequency control equipment by generators, and under investment in frequency control equipment by customers. Stanwell suggests that customers should pay all costs of maintaining their frequency within their tolerance band and generators pay a proportion of any residual costs relative to their derived benefit.

Origin states that the data used to allocate costs should also be used to reward positive responses. Origin also notes that fixed factors will distort the incentives upon generators and states it is inappropriate to use data from one month to determine the causer pays share in another month, particularly for peaking plant, which may or may not have operated in a given month. Origin goes on to note that while dynamic factors will be non-discriminatory, they will increase the complexity and costs of the market.

Origin claims that the application of causer pays factors to embedded generation units will increase ancillary service costs to embedded generators and act as a disincentive for investment in embedded generation.

The State Electricity Commission of Victoria (SECV) notes that only scheduled participants have the ability to respond to the signals provided by the causer pays cost allocation for regulation services, and hence only scheduled participants should be allocated the costs for regulation services. Further, the SECV states that fixing the causer pays factors directly conflicts with the causer pays philosophy, and will result in actual causers of the need for regulation services not having to pay for the services required because of their actions. The SECV does not agree that market participants need to know their causer pays factors in advance, and argues that market participants should inherently know their contribution to the need to regulation services.

The SECV suggests that causer pays factors should be calculated retrospectively and only applied to the periods from which they are derived.

NEMMCO notes that condition C3.5 needs to clarify whether the transitional factors specified in clause 3.11.8 are to be retained for the 6 month period.

### ***Other issues***

NEMMCO list a number of typographical changes to the Code, to improve the clarity of the Code.

## **3.6 Commission considerations**

FCAS currently represents around 50% of ancillary services costs in the NEM<sup>11</sup>, and the changes proposed are a significant move away from the current arrangements for the procurement of and payment for FCAS. The Commission considers that the introduction of spot market trading for FCAS is not likely to lessen competition in the FCAS markets, and in fact is a pro-competitive step.

However, the Commission has a number of concerns about the level of public benefits that are expected to arise from the implementation of the new arrangements and considers that a number of factors may offset potential public benefits to some extent. In particular, while public benefits are expected to arise from the increased economic efficiency that market based arrangements can bring, these may be offset by:

- the complexity of the arrangements discouraging entry to the markets and increasing transaction and start up costs;
- participants exercising market power;
- participants facing difficulties in managing risk arising from the introduction of the FCAS markets;
- assumptions and approximations used in the proposed causer pays cost allocation methodology; and
- other issues arising from specific Code changes.

These issues are addressed in more detail below.

### **3.6.1 Complexity**

Interested parties argue that the proposed arrangements are complex and query the need for eight separate markets, indicating concerns regarding the increased transaction costs. The work of the EUAA compares ancillary service arrangements in overseas electricity markets and the Commission notes that in the examples given the arrangements for FCAS do not delineate markets as narrowly as has been proposed for the NEM (see Appendix B).

NECA addresses the issue of complexity the applications, in particular the likely impact on competition and transaction costs from having 8 FCAS markets. However NECA states:

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<sup>11</sup> Refer to Table 2.2.



the proposed sub-markets produce a set of specific services and specify the services required in as technology neutral a way as possible. The Panel [Code Change Panel] is satisfied that the increased transaction costs are justified by the improved economic efficiency of the new arrangements.<sup>12</sup>

Notwithstanding NECA's statement the Commission has not been provided with a quantitative assessment of the claimed improved economic efficiency or likely transactions costs. Further the Commission is aware that there is some discrepancy between NEMMCO's and market customers' estimates of system development costs for participants.

### ***Cost benefit analysis***

The Commission notes that NECA recognises the need for quantitative assessments of the proposed arrangements by including a requirement for NEMMCO to undertake a cost benefit analysis of future development proposals in the proposed Code changes (clause 3.1.4(a1)). This requirement of NECA's is well supported by interested parties, with the lack of any cost benefit analysis being one of the most strident criticisms levied in response to the Code changes and draft determination. However, while estimation of the costs of implementing new arrangements may be relatively simple to undertake, estimation of the benefits may be more difficult.

Cost estimates will include systems development and resources for design, implementation and ongoing operation of new arrangements, for NEMMCO and other market participants. However, modelling of the NEM or possibly the whole economy may be required to derive quantitative estimates of benefits from proposed arrangements, and such work can be very costly, and highly dependent on assumptions used to derive the results.

As such, while it may be necessary to consider using modelling techniques to estimate benefits in some cases, in other situations a full discussion of the likely underlying benefits, and any risks to achieving them, may suffice.

The Commission supports the requirement for some form of quantitative work to be undertaken, as part of the development of proposed Code changes, but also recognises the costs of doing so may be quite high. Hence the Commission recommends that NECA, NEMMCO and market participants consider in detail their expectations of such a process, and their preparedness to fund the required analysis and modelling.

Further the Commission supports the use of quantitative analysis to be used in reviewing FCAS market outcomes and this is addressed in section 3.6.2, and condition C3.4, below.

### ***Requirement for 8 FCAS markets***

The Commission considers that the perceived complexity of the proposed arrangements arises from both the specification of the FCAS requirements (into 8 separate services) as well as the operation and interactions of the proposed 8 FCAS markets with the existing energy market.

It is argued by parties in favour of the proposed FCAS spot markets that the arrangements represent a simplification of FCAS arrangements in comparison to the current process. The current arrangements already effectively segregate the FCAS market into 8 sub-markets for different services (specified as a technical capability) that are used to meet the FCAS

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<sup>12</sup> NECA Code change Panel Report, Volume 1, pages 9-10, August 2000.

requirements.<sup>13</sup> However, some services are used to meet more than one FCAS requirement. For example, automatic generation control (AGC) services can be used as both raise and lower services for both regulation and delayed contingency services, and hence the sub-market for AGC is in fact an aggregation of a number of different service requirements.

NEMMCO also argues that the proposal to introduce 8 FCAS markets is a sensible transition from the existing arrangement of contract markets whose specifications are technologically based.

A comparison with overseas electricity markets demonstrates that the introduction of market arrangements for some FCAS has been undertaken in PJM, UK-Wales, New Zealand and California. However, in each of these markets the ancillary service markets are limited in number and provision is made for ongoing contract based arrangements, either with the independent system operator or bilaterally. Direct comparison is difficult because of differences in definitions and market operating environments. One key difference that emerges is that the specification of ancillary services is generally technical in nature, rather than defining the actual ancillary service objective. This has resulted in fewer ancillary service markets being developed and operated in the electricity markets considered. However, NEMMCO has argued that the size of the overseas markets may result in fewer FCAS actually being required to manage the markets, and hence the need to develop FCAS spot markets is correspondingly less.<sup>14</sup>

The Commission agrees that specifying the requirements for FCAS in technically neutral terms means the new arrangements provide a public benefit in comparison to the existing arrangements. The Commission also notes that a technically neutral service specification allows for the possibility of technical innovation, and hence a broader range of potential participants. However, the Commission considers the benefit achieved by this technically neutral specification may also be achievable using an alternative specification, that references fewer than the proposed 8 spot markets. Consequently the Commission has imposed a condition of authorisation that requires NEMMCO, in undertaking the review of ancillary services proposed in clause 3.1.4(a1), to also consider rationalisation of the FCAS arrangements, irrespective of possible development of two way markets. The Commission's condition in respect of the ongoing review of ancillary services is set out in condition of authorisation C3.1.

### ***FCAS and energy market interaction***

The Commission considers that the perceived complexity of the proposed arrangements is heightened by the requirement to manage the interactions between the FCAS markets and the energy market. Further, some chance exists of the proposed 8 markets segregating into regional markets (creating 40 FCAS markets in the 5 region NEM) if the interconnectors between regions are not operating, thus introducing a requirement to manage financial positions that may be impacted by prices diverging.

IES also notes the complexity of the arrangements in their report to the Commission, but state that participants in the NEM are sophisticated traders, and concern regarding the complexity

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<sup>13</sup> The 8 markets reflect the payments made by NEMMCO for 6 second raise and lower, 60 second raise and lower, AGC, rapid generating unit loading, rapid generator unit unloading and load shedding.

<sup>14</sup> National Electricity Code Ancillary Services Amendments – Comments on Submissions, NEMMCO, 20 February 2001.

of the arrangements is somewhat overstated when viewed from the perspective of market participants. The operation of 5 minute spot markets introduces a degree of flexibility to the arrangements that can greatly benefit all market participants, as suppliers respond to changing market situations.<sup>15</sup>

The Commission considers any market arrangement, including the current contract market, that requires individuals to make decisions about their participation in the energy and FCAS markets could be characterised as complex. Further, a greater number of markets suggests greater difficulty in managing the interactions and information required to participate. The Commission is aware that participants that hold FCAS contracts under the current arrangements already manage the energy and FCAS market interactions, when they choose whether or not to make themselves available in the FCAS market. Thus the Commission does not consider the complexity of the new arrangements will significantly disadvantage existing market participants.

The proposed arrangements also provide participants with the opportunity to opt into and out of the FCAS markets, and to limit their participation if they do not wish to (or can not) provide all of the required services. Thus although the EUAA argues that new entrants are likely to be deterred by the complexity of the arrangements, the Commission considers that new entrants can reduce the perceived complexity by limiting the number of markets they enter.

The Commission considers that the proposed specification of FCAS markets allows for a direct mapping between service requirement, causes and costs, greatly increasing the transparency of FCAS arrangements. The Commission considers where participants can easily understand the consequences (especially financial consequences) of their actions there is a far greater chance that behaviours will be modified. Thus, by increasing the transparency of the market arrangements the proposed changes may lead to greater economic efficiencies.

### ***Generator incentives***

The Commission also notes the concerns raised by Origin regarding a possible lessening of competition in the energy market due to the introduction of the FCAS spot markets. The Commission agrees that the operation of the FCAS spot markets could increase the incentive on some generators to rebid capacity in the FCAS markets, which if dispatched will remove that capacity from the energy market, leading to a potentially higher energy price. Such a strategy will have a similar effect to a generator rebidding capacity in the energy market into a higher price band. However, the Commission does not consider that the existence of the FCAS market is likely to significantly change the incentives facing generators to rebid their capacity to higher price bands in the energy market. As a bidding strategy, the key factor influencing a generator will be the likely increase in energy price, and any revenue from FCAS markets will be a secondary consideration.

An exception to this will be at times when the price for a given FCAS is greater than that of energy, and in that situation you would expect to see generators rebidding capacity in the FCAS market to lower price bands to try to get enabled for FCAS. The Commission considers that the situation of FCAS prices being greater than energy prices will be relatively rare, and notes that market participants also expect FCAS and energy prices to be similar, as

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<sup>15</sup> The IES report to the Commission is available on the Commission's website.

much as 95% of the time.<sup>16</sup> Further, the co-optimisation process will also lead to capacity being enabled in the FCAS market rather than the energy market, where there is an overall benefit to the market from doing so.

The Commission notes that under the present arrangements generators with contracts for the provision of FCAS are able to change their availability for FCAS. The effect of changes in availability under the current arrangements will be similar to the effect of rebidding in the proposed FCAS markets – that is potentially higher than otherwise energy or FCAS costs, depending on circumstances. Thus the Commission considers the detriment arising from any lessening of competition due to changes in the incentives facing generators is likely to be similar to that arising under the current ancillary service arrangements.

### ***Overall***

The Commission considers that by increasing the transparency of the markets and adopting a technically neutral specification for FCAS, the proposed changes represent an incremental improvement on the current arrangements. However, the 8 FCAS market proposal is complex and may have a deterrent effect on new entrants. Hence the Commission considers that the review of the FCAS market arrangements should consider the possibility of simplifying the arrangements by reducing the number of markets, while maintaining the technical neutrality of the specifications, if possible.

Further the Commission believes that some public detriment may arise from the likely impact on generator incentives to rebid in the FCAS and energy market, especially in circumstances where the spot prices for particular ancillary services are greater than the energy prices. However, the Commission considers that the detriment arising from such behaviour is small because:

- the times when FCAS prices are expected to be greater than energy prices will be extremely rare; and
- in most circumstances the expected increase in energy price, rather than possible FCAS revenues remains the key incentive upon generators to rebid capacity to higher price bands in the energy market, or lower price bands in the FCAS markets.

### **3.6.2 Competitiveness**

The applicants and some interested parties claim that significant public benefits will accrue due to the introduction of competitive market arrangements for the procurement of FCAS. The public benefits arise from the implementation of spot market mechanisms to determine the price of FCAS, and the resultant increases in productive and dynamic efficiency in FCAS markets. However, the Commission considers that the effectiveness of competition in the FCAS spot markets will impact on the delivery of public benefits from the implementation of the proposals.

The existence and use of market power in the energy market may offset the potential public benefits that arise from the operation of the energy market. In the same way, the Commission considers that any market power accruing to suppliers of FCAS will, if used, detract from the

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<sup>16</sup> See NRF submission in response to the draft determination, dated 21 May 2001, available on the Commission's website.

expected public benefits that may arise from market based arrangements for the provision of FCAS.

The ability of market participants to exercise market power will be largely determined by the overall structure of the FCAS spot markets. The fewer competitors in the markets then the more likely it is that those participants will have market power. The use of market power can manifest itself in the ability of individual participants to alter their bid prices and quantities in order to increase the market-clearing price.

Consideration of NECA's weekly market reports shows that there are examples of generators rebidding in response to market conditions, including for reasons of profit maximisation or financial optimisation. The existing arrangements under the Code allow generators to seek financial gain in the rebidding process. In the period between November 2000 and January 2001 there have been around 50 instances of generators rebidding where financial gain is the stated reason.<sup>17</sup> The Commission expects that rebidding by market participants could be expected in the FCAS markets, but notes the small volumes in the FCAS markets suggests there will often be a large excess of supply over demand. This imbalance is likely to mean that participants in the FCAS markets will have less market power than participants in the energy market.

However, the general lack of geographical restrictions on the provision of FCAS significantly increases the potential competitiveness of the FCAS markets. The Commission understands that there are unlikely to be binding FCAS constraints on the existing interconnectors between regions, even in situations where binding energy constraints apply. This is because the interconnectors are currently operated at levels to ensure that FCAS can be imported, even where energy imports are constrained. If the practice continues, the ability to source FCAS from anywhere in the NEM will only be subject to regional boundaries where regions are islanded due to a failure of all importing capacity. With the commissioning of QNI in February 2001 the Commission notes that the total requirement for FCAS has fallen, that is the requirement for the whole interconnected system is less than the sum of the requirements for the two separated systems. Therefore, the Commission expects that there will be a sufficient level of competition to enable prices in the FCAS markets to fall to efficient levels.

Nevertheless, there will remain some requirement for FCAS to be regionally based, for example when interconnector outages island regions in the NEM. In such cases there will be a need to ensure that FCAS can be provided on both sides of the interconnector, if the power system is to be kept operating in both regions. For that reason the Commission considers that there will be some ongoing geographical restrictions on the provision of FCAS, which at certain times may restrict competition between providers.

In the light of concerns raised in submissions about the level of competition for the provision of FCAS in some circumstances, the Commission considers that some additional measures to facilitate new entry into the FCAS markets may be required. The EUAA cites the costs of participating in the NEM as one of the reasons that demand side participants are unlikely to enter the FCAS markets. The Commission recommends that NEMMCO alter the registration requirements so that ancillary service providers can register with NEMMCO at a reduced cost. In particular, the fixed fee component of the current fee structure may discriminate against potential participants in the FCAS spot markets, where those participants do not wish

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<sup>17</sup> NECA's weekly market reports, available from NECA's website.

to also participate in the energy market. The current fee structure was established before the likely form of FCAS spot markets was known, and did not take into account participants in the FCAS spot markets. The Commission is concerned that the fixed fee component (at least \$9,000 per year) will in fact discriminate against smaller participants that could participate in the FCAS markets, although participation in the energy market would not be viable. As such the Commission recommends that the fee structure be amended to set to zero the minimum fixed fee component that such participants would face. This recommendation is addressed in condition C3.2.

On balance, the Commission expects that the level of competition in the proposed FCAS markets will be similar to or greater than the extent of competition currently experienced in the energy market. Therefore, the Commission considers that the operation of the proposed FCAS markets should be subject to similar monitoring arrangements as the energy market. The monitoring of FCAS markets should be undertaken by NECA, on an equivalent basis to the monitoring that NECA currently undertakes in the energy market. NECA must be able to access bidding, rebidding, and dispatch data for all FCAS market transactions (and energy market transactions) and as part of its monitoring should review:

- FCAS prices;
- FCAS capacity offered;
- Participation, new entry and market share;
- FCAS and energy market interactions; and
- any other relevant matters.

NECA should issue reports at the same time as it reports on energy market activity. The information in the reports can be used by the Commission, NECA, market participants and any other interested party to assess the operation of the FCAS markets, and consider any market design changes that may be required. The Commission has addressed this issue by imposing condition C3.3.

#### ***On-going development of ancillary service markets***

The proposed Code changes represent the first steps leading to the creation of two way spot markets for FCAS, and the extension of spot market trading to NCAS. The Commission has noted the concerns of interested parties about the ongoing development of the FCAS markets, and possible development of other ancillary service markets, in that the costs of further reviews and development can only be justified if some certainty exists about the delivery of expected benefits. (This issue is also discussed in section 3.6.1, above).

The Commission considers that an analysis of the FCAS market outcomes should be undertaken, using data from at least 12 months of activity. The analysis must consider the spot market outcomes, as well as the outcomes seen by end users and should lead to an estimate of the benefits arising from the implementation of the FCAS spot markets. The analysis should also consider any explicit impediments to the realisation of benefits from implementing the FCAS spot markets, including whether any such impediments arise due to underlying structural issues, market design, market rules, and/or retail market arrangements.

Further a review of the outcomes arising from the analysis should consider implications for ongoing market development and canvass alternatives to spot market trading if it is clear that the expected benefits are not being delivered, and are unlikely to be delivered without major structural changes to the markets. In particular, possible development of two-way FCAS markets and NCAS spot markets should not proceed until a detailed analysis of the outcomes has been undertaken.

Conditions C3.4 and C3.5 address this issue.

### **3.6.3 Risk management**

The Commission considers that the ability to manage risk is a vital element of participation in any market. Hence, the successful operation of the FCAS markets will partly depend on market participants being able to manage the risks associated with the FCAS markets. Without adequate risk management, market participants with high exposures to FCAS costs risk financial failure at times of high prices. Further, the Commission recognises that where a market in risk management products is not particularly competitive, higher premiums will be passed on to end users in the form of higher prices.

The NRF analysis of likely exposure at times of high prices shows that the potential cost to a retailer, without hedge cover, is around \$4.65million per hour and the cost to a generator is around \$6.2million per hour. This analysis was undertaken prior to information on the causer pays cost allocation being published, and in the light of that more recent data, the figures decrease slightly to around \$4.1m per hour for retailers.

Notwithstanding the actual data used, it remains that the costs to market customers and generators will be significant, at times when prices are high, if those costs are unhedged. The longer high prices remain, then the greater the threat to retailers' viability.

The need to hedge on the part of retailers is offset to some extent where they can pass through the costs to end users. However, the Commission is aware that both the needs of end users and retail market arrangements constrain retailers' ability to pass costs through. In particular, end users do not like high variability in their bills, especially where the variability is driven by ancillary services, which are services purchased on their behalf and out of their control. Thus, end users are pressuring retailers to provide a uniform charge and thus bear the risks of ancillary services cost fluctuations. Further the retail contestability arrangements in each state limit the customers to whom retailers can pass costs, and as noted in some submissions, these arrangements are in a state of flux, making it difficult for retailers to know what their options will be.

The generation sector of the NEM will also have an exposure to ancillary service costs, which many will want to manage through hedging. The Commission notes that under the current contract arrangements generators have been able to partially manage their FCAS exposure through participating in the contract market for service enablement. Under the proposed arrangements, as providers of services some generators will be able to use the income they receive to offset costs, but in that instance may want to use hedging to smooth their income flows. Other generator participants may have a net exposure to FCAS costs, which they will need to manage.

All participants need to understand their exposure to ancillary service costs in order to manage their risks. While price is a key variable, knowledge of the quantity of services

purchased and share of the costs is also essential to managing risks. The Commission considers that NEMMCO can greatly assist participants manage their risks by providing advance information on the quantity of each FCAS required. If participants are aware of the total requirement for FCAS, and they are aware of the cost allocation and their market share, they will then have a better idea of the amount of hedging they require.

NEMMCO states that FCAS requirements are relatively stable. For example, contingency requirements are generally set at the size of the largest generator or load in the NEM, and as such will only vary in response to generator or interconnector outages. Regulation requirements are less stable, but usually vary between 200MW and 300MW, depending on expected load.

The Commission has imposed condition C3.6 to require the NEMMCO to provide information on FCAS requirements in advance of the relevant trading intervals, and to also provide information on the factors that alter FCAS requirements, to enable market participants to estimate likely NEMMCO requirements in advance.

### *System testing and market start*

The Commission considers that the FCAS markets should only commence when NEMMCO and market participants are confident that the market arrangements will operate properly. As such it is vital that adequate testing of the arrangements is undertaken prior to the commencement of the FCAS markets. Clause 3.8.7B(a) of the Code states:

NEMMCO must develop and publish a testing program, including criteria to determine whether the systems required to dispatch market ancillary service generating units operate satisfactorily, using Code consultation procedures. NEMMCO must determine at its sole discretion whether these systems are operating in accordance with the published testing program. NEMMCO must give notice to all Market Participants of the market ancillary services commencement date upon completion of 60 consecutive days of satisfactory operation and testing of the systems.

In implementing the requirements of clause 3.8.7B(a) NEMMCO has established a Cut-over Committee, that must assess different criteria against specified measures and report to NEMMCO prior to the market commencement date being established. The criteria include:

- finalisation of the Commission's authorisation process;
- satisfaction of participant readiness requirements;
- completion of NEMMCO project requirements;
- successful completion of the participant trial; and
- finalisation of the causer pays factors.

The Commission understands that NEMMCO will then take into account the report of the Cut-over Committee in making its determination in respect of the FCAS market start date.

NEMMCO has interpreted the Code provisions to refer to the IT arrangements, and technical capability of participants, rather than an overall market readiness test. Concerns about NEMMCO's limited interpretation of the Code provisions have been raised by market participants and NECA. NECA recently stated that the pre-conditions for market start should



be broadened to ensure the testing programme is “wide ranging and thorough going”, and cites concerns over market participants ability to understand and manage risk in the new market.<sup>18</sup>

NEMMCO argues that as clause 3.8.7B(a) refers to “systems required to dispatch” it therefore relates to the physical ancillary services market and issues such as risk management are not within its purview.<sup>19</sup>

The Commission accepts the validity of concerns about the overall functioning of the proposed FCAS markets, and considers that participant readiness could be categorised into three areas:

- understanding proposed market arrangements;
- technical readiness; and
- financial readiness.

NEMMCO’s assessment of participant readiness addresses technical issues only, and requires that all registered ancillary service providers must be technically prepared and no more than 6 other market participants may signal their “unreadiness” before the cut-over criterion is not met. Nevertheless, the Commission thinks there may be value in NEMMCO taking a broader view of participant readiness to ensure the market will operate as expected.

The Commission notes NECA’s call for a more wide ranging testing programme seems to require an assessment of market participants’ understanding of the proposed arrangements and their ability to manage their risks. The Commission supports the notion of extending the ‘market readiness’ assessment but is wary of mandating a testing programme that relies on subjective assessment. To a large extent the Commission considers that any review of market participants’ understanding and financial readiness would have to involve subjective elements. Further, irrespective of the opportunities that market participants have had, or may have in the future, to participate in market trials, increase their understanding of the proposed arrangement or manage their risk, the outcomes of such opportunities can not be guaranteed. Any type of subjective review of market readiness may also create ongoing controversy and delays, which do not lead to either increased understanding of the proposed arrangements, or better risk management arrangements.

In this context, the Commission considers that the 30 day lead period, as required by the definition of market ancillary services commencement date does provide an opportunity for participants to access and familiarise themselves with the systems, bidding and rebidding arrangements that will form the FCAS markets. The 30 day lead time provides for a period of stability of the systems, and knowledge of the market arrangements specified in the Code, all be it still in the pre-production environment, while still allowing for dynamic interactions to be experienced and analysed by NEMMCO and market participants. If problems arise during this period the NEMMCO has the opportunity to consider how to resolve such issues prior to market commencement.

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<sup>18</sup> Press release 29 June 2001, NECA reiterates need for smooth transition to new ancillary services arrangements, <http://www.neca.com.au/What'snew.asp?CategoryID=32&ItemID=790>, accessed 3 July 2001.

<sup>19</sup> Determination report cut-over criteria for the implementation of the ancillary services market, paragraph 5.1.2, page 4, Version No: 1 Final, NEMMCO, 24 May 2001.

Notwithstanding NECA's concerns the Commission is not intending to impose any conditions addressing the systems and market testing arrangement. However, if NECA considers the market should not commence until some further testing programme has been implemented then NECA, as the Code administrator can take action to satisfy its concerns. The Commission believes that NECA is best placed to determine whether NEMMCO has satisfied the requirement of clause 3.8.7B(a).

### ***Risk management options***

Risk management strategies in the proposed FCAS spot markets must try to deal with the risk either on an individual basis or for the whole of the market. Strategies that manage risk for the whole of the market could include:

1. a phased introduction of the spot markets;
2. price caps (set below the market price cap of VoLL);
3. NEMMCO fund for managing a firm price for FCAS;
4. a facilitated hedging market; or
5. NEMMCO forward trading.

Each of these proposals would go some way to limiting the risk that market participants face by limiting the impact of extreme price variations. However, each of these proposals has a downside in terms of implementation costs and the introduction of distortions to the operation of the FCAS markets.

1. Phasing the introduction of the new markets would require NEMMCO to operate two sets of procurement and dispatch arrangements in parallel during the transition period, with consequent cost and confusion. The Commission does not support such a measure at this time.
2. Price caps set below VoLL will have the effect of limiting price fluctuations, and they could be introduced in an escalating manner, so that as the market becomes more experienced the cap is increased to allow more scope for market determined outcomes. However, price caps can have a detrimental effect in that they may deter sufficient providers from coming forward, especially at times of scarcity as service providers may prefer the higher prices available in the energy market. This is likely to add to overall costs, where NEMMCO has to resort to direction and compensation arrangements apply.
3. A NEMMCO managed fund could be established, where a strike price is nominated and funds accumulate when the spot price is less than the strike price, and are paid out when the spot price is greater than the strike price. Such an arrangement approximates a contract for differences and has the effect of fixing the price paid for FCAS. However, it has some difficulties – mainly the determination of an appropriate strike price and the potential to distort market outcomes by making FCAS suppliers indifferent to the FCAS spot prices. A further complication is introduced where different strike prices are set for each service, and different strike prices are determined for peak and off peak periods.
4. A facilitated hedging market could be operated by NEMMCO, in a similar way to the short term forward market envisioned in the early formulation of the Code. However, the

Commission rejected the short term forward market proposal at the commencement of the NEM partly on the basis of perceptions of a conflict of interest between NEMMCO's position as the market operator and facilitating a subsidiary market. Also of concern to the Commission is the potential crowding out of private sector involvement in developing hedging markets.

5. Forward trading in FCAS hedges by NEMMCO may promote bilateral risk management where it is conducted through auctions that establish common clearing prices, use standardised instruments that can be traded on secondary markets and is phased out progressively. The central auctions should assist participants' initial price discovery process and thereby make it easier for them to enter into informed bilateral trading. A progressive phase-out of the centralised arrangements would ensure participants had incentives to explore alternatives, such as bilateral hedging arrangements. Further NEMMCO has experience in operating the Settlements Residue Auctions, the implementation of a forward market could be based on their experience. Such an arrangement would require NEMMCO to be an active participant in the market, with implications for their financial management, and meeting other requirements such as International Swap Dealers Association licensing.

The Commission considers that the options presented above represent a reasonable sample of global strategies that could be used to manage risk at the commencement of the FCAS markets. What is not clear to the Commission is whether the costs of implementing any of these options is justified, given that a global strategy may crowd out alternative market driven hedging arrangements. Further the Commission notes that there is significant opposition from many different interested parties to the mandated strategies listed above. Consequently the Commission does not intend to impose any of the above options as a condition of authorisation.

Another risk management proposal, put forward by Ergon at the PDC and supported by the NRF, CS Energy and Enertrade, allows for the hedging of ancillary service costs using the existing energy hedges, by way of combining energy and FCAS costs at the settlements stage, using a fixed factor. Despite extensive support for the proposal on the retailer side of the market, other parties (including some retailers) do not support its implementation. The Commission notes that a cash flow risk will lie with NEMMCO that will have to be managed and will alter NEMMCO's financial management practices significantly.

Further issues raised include the impact the NRF proposal will have on the causer pays process, where the benefits of the signals provided by the cost allocation will be dissipated by the long time frame for the ancillary service factor.

Despite any specific problems, or merits of the NRF proposal, the Commission considers that the lack of uniform acceptance of the ancillary service factor idea<sup>20</sup> makes the imposition of this arrangement through a condition of authorisation unacceptable at this stage in the process. This decision reflects the Commission's concerns in respect of process, rather than any specific concerns about the merits or otherwise of the proposal.

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<sup>20</sup> The Commission notes that while there is support from some retailers and generators, there is also a number of other retailers and generators that do not support the proposal.

The Commission notes that the option of individuals managing their own risks is an alternative to the collective strategies discussed above. The effectiveness of allowing bilateral risk management arrangements to unfold will of course depend upon the incentives individuals face, their expectations about the likely risks, and the depth of the market for bilateral instruments.

Under the proposed arrangements, as occurs currently, market customers are able to pass through at least some of their FCAS costs to end users, and as such will have a reduced incentive to manage the risk. Generators too, may choose to manage their risk under the new arrangements by participating in the FCAS markets, and self hedging their costs with revenues.

Further large generators, whose revenues from ancillary services are incidental to their main revenue stream from the energy market, may not have a large incentive to offer hedging instruments. However, other types of generators, for whom ancillary service revenues represent a significant component of their revenues, will have an incentive to offer hedges, in order to smooth their revenue flows. The Commission notes Tarong Energy states in its submission that it is keen to participate in a hedging market.

IES<sup>21</sup> believes that the new arrangements will provide a better basis for hedging FCAS risks because the basis for settlement should be more transparent in that market clearing prices are published, counterparties will be able to identify each other more easily and providers will have more control over their dispatch. The Commission notes the Law and Economics Consulting Group (LECG) report to NECA argues that the operation of FCAS spot markets should enable hedging products to be developed, and hence assist all NEM participants to manage their FCAS exposure.

A further option of using existing energy hedges to manage FCAS risk is also available to NEM participants. The Commission notes that ancillary service and energy prices are expected to be highly correlated (the NRF states a 95% correlation).<sup>22</sup> Hence, the Commission considers that energy hedges could be used to manage FCAS risk much of the time, where FCAS specific products are not available or do not meet participant requirements at a particular time. The Commission notes that market participants will need to be able to determine expected service requirements and this is addressed in condition C3.6.

### ***Overall***

The Commission must consider whether the requirement for risk management, and the lack of global provision of risk management arrangements, detracts from the benefits that may arise from the proposed FCAS spot markets. The Commission must consider this in the context of comparison with current market arrangements, under which hedging instruments have not developed in the three years since the commencement of the NEM.

In the spot market environment, participants face both a volume risk and a price risk, similar to the risks currently faced under the current contract arrangements. The Commission notes that there is a risk under the new arrangements in that prices can vary as a result of bidding and rebidding behaviour by suppliers of FCAS, whereas under the current arrangements

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<sup>21</sup> IES report to the Commission, Review of changes in market risk due to introduction of FCAS markets in the NEM, March 2001, available on the Commission's web site.

<sup>22</sup> See NRF submission of 21 May 2001, page 9.

prices can vary as a result of FCAS suppliers changing their availability. Thus the Commission considers the impact of rebidding behaviour may not be significantly different to that arising under the current arrangements, where suppliers withdraw from the market, effectively forcing NEMMCO to enable more expensive services.

Further, the Commission places substantial weight on the possibility of risk management instruments being developed, when the detail and commencement date of the proposed FCAS markets is known. The Commission does not consider that the lack of a Code mandated risk management arrangement contributes to any public detriment due to a lessening of competition arising from the implementation of the proposed FCAS markets. Further, while a robust and liquid market in risk management tools would be ideal, such a market is unlikely to precede the commencement of the proposed FCAS markets. The Commission considers that as energy market hedges could be used to manage FCAS market risk, the degree to which the lack of specific FCAS risk management instruments offsets the benefits arising from the markets is negligible.

### **3.6.4 Cost allocation**

The Commission supports the principle of a causer pays cost allocation methodology. The methodology is designed to minimise overall ancillary services costs by allocating costs to causers, thus providing an incentive for those who drive the need for ancillary services to change their behaviour to minimise their costs.

However, submissions received raise concerns about the cost allocation, in respect of regulation FCAS, and more broadly regarding the participation of TNSPs in the cost allocation. Further the EUAA proposes a significantly different cost allocation, incorporating TNSPs and changing many of the proposals put forward in the applications.

#### ***Regulation FCAS***

The proposed Code changes require NEMMCO to develop factors that assign a relative degree of cause to loads and generators, according to short-interval metering data. The Code requires NEMMCO to fix the factors for a period of 6 months, although NEMMCO also states that the methodology used to determine the factors should be applicable to dynamic factors, which it intends to introduce at a later date.

The LECG report to NECA supports the proposed cost allocation methodology for regulation FCAS and states that NEMMCO's recommendations should enhance the efficient recovery of ancillary service costs.

The Code requires NEMMCO to consult regarding the methodology it must develop for causer pays factors. The aim of the proposed methodology is to develop factors that reflect each metered participant's actual contribution to overall frequency deviations. In each four second metering interval a participant is deemed to be a contributor to the regulation FCAS requirement if any deviation from their dispatch target adds to the need for the service. For example, a generating unit that is operating below its dispatch target will only be deemed to be contributing to the need for regulating FCAS if frequency is below 50.0Hz in that interval.

The Commission has concerns about the principles set out in the Code in that frequency deviation is not always a true indicator of the need for regulating services. For example, in the extreme if the regulation service was perfectly able to maintain the frequency at 50Hz, no

frequency deviation would be recorded, and hence no causers would be attributed the costs of the regulation service, even though a considerable amount of service could be being utilised. Conversely, in a situation where no regulation service was being utilised, frequency could be fluctuating wildly and many causers could be identified – but no costs incurred. In both cases, albeit unlikely cases, the use of frequency to attribute costs is ineffective, and is unlikely to result in participants' behaviour being modified.

For that reason the Commission considers that the principles underlying the development of factors must be amended to reflect the market participants' contribution to the need for regulation services, not their contribution to overall frequency deviations. This is addressed in condition C3.7.

By deriving factors that reflect participants' contribution to the need for regulation services, the costs allocated to participants will reflect participants' behaviour and will drive short term behavioural changes (where possible) and possibly longer term innovation.

However, not all market participants will be able to respond to the costs allocated to them. In particular market customers may not be able to participate in being allocated causer pays factors, and they will have to pay the residual costs, not attributable to an individual participant. The Commission supports the Code changes that address this issue by allowing market customers to 'opt in' to the factor allocation, where they have the required metering equipment.

The Commission also considers that the signals provided by the cost allocation will be muted where the factors are fixed, and the longer the period of time they are fixed, the less accurately they will reflect the actual contribution to the need for FCAS.

Where fixed factors apply it may be the case that FCAS suppliers will alter their behaviour in the sample period to ensure they are assigned a lower factor than would usually occur, and revert to their more costly behaviour outside of the sample period. It may also be the case that particular circumstances arise where a FCAS supplier is assigned a factor and due to circumstances beyond their control, their behaviour is affected so that the factor is no longer a true indicator.

Hence, the Commission considers it necessary to update the factors at fairly frequent intervals in order to ensure that the cost allocation signals are passed through to causers as soon as possible. The shorter the period for which factors are fixed the better the signalling, but this needs to be balanced against the costs of updating the factors, and the need for market participants to adjust their hedging position when the new factors apply. The Commission considers for the first year of FCAS spot market operation the fixed factors must be updated at monthly intervals. The Commission notes the Code changes allow for dynamic factors to be introduced at the end of the period for which fixed factors apply, or to continue with some form of fixed factors, to be determined through a consultation process. The sample periods from which the data used to update the factors must be taken from the most recent period possible, and new factors must be notified in advance to enable participants to manage their exposures. Condition C3.8 addresses this issue.

The Commission considers that under the current arrangements, some efficiency gains are at risk where market participants' actions reduce the requirement for FCAS but NEMMCO, as the sole purchaser of FCAS does not amend its overall requirement. In such cases unless the reduced need for FCAS can be translated into an overall reduction in market requirements the

net effect will be a cost shifting exercise from those who can respond to those who can not. This means that the process for determining the required amount of FCAS capability that NEMMCO must purchase should also reflect the expected changes in the requirements for FCAS stemming from behavioural changes on the part of market participants.

The standards for FCAS are specified by the Reliability Panel, and translated into a megawatt (MW) requirement by NEMMCO. The Commission is aware that the Reliability Panel is currently reviewing the frequency standards and is investigating the potential to incorporate economic criteria into the standards. Such a change may reduce the overall need for FCAS, or may alter the manner in which requirements for the different services are determined, due to interactions between the different service and the energy market. However, NEMMCO's assessment of the amount of MW of FCAS needed to meet the requirements (however specified) is currently based on a subjective assessment of likely system requirements. This assessment by NEMMCO is the process that determines the exact amount of FCAS enabled in each dispatch interval.

Thus, the Commission considers that in order for benefits from the setting of efficient factors to flow to end users, NEMMCO must explicitly assess its obligations and performance in the procurement and dispatch of FCAS with a view to ensuring the most efficient overall requirement for the NEM. This is dealt with in condition C3.9.

### ***Contingency FCAS***

Contingency costs are to be allocated 100% to generators for raise services, and 100% to market customers for lower services. This allocation is a very loose causer pays approximation, reflecting the impact of generator and large customer trips on the system.

The LECG report to NECA mentions that spreading these costs over as broad a base as possible, until more sophisticated mechanisms are implemented, should minimise distortions to decision making during the transition. Substantial progress is envisaged in the second phase toward a structure where costs are borne by entities that can act to reduce the costs of these ancillary services.

Allocating contingency FCAS costs on a better causer pay basis is not technically possible at this stage, and any review of the cost allocation should also consider the role of network outages in causing a need for contingency FCAS. Further, given that contingency FCAS is usually required in response to an unintended outage, it is not clear that a direct attribution of costs (where measurable) will result in changes to behaviour. The Commission considers that the proposed cost allocation is an improvement over the current cost allocation, but more work needs to be undertaken by NEMMCO in the ongoing review of ancillary service arrangements to develop a more effective causer pays arrangement (see condition C3.1).

### **3.6.5 Other issues**

#### ***Frequency standards***

NEMMCO is obliged under the provisions of the Code to operate the power system according to the frequency standards that are determined by the Reliability Panel. The Reliability Panel is in turn advised by NEMMCO, and is currently undertaking a review of frequency standards. The current review is considering introducing frequency standards based on economic criteria, rather than the current absolute standards. Such a move may enable NEMMCO to decrease the amount of FCAS that it enables, and dispatches.

The Commission notes the concerns of many market participants regarding the frequency standards but considers the current review by the Reliability Panel the appropriate forum for the issue to be resolved.

### ***5 minute pricing***

The NRF raises the issue of the move to settlements for FCAS being undertaken on a 5 minute basis, rather than a 30 minute basis, like the energy market. However the Commission's understanding is that while the proposed FCAS markets will clear on a 5 minute basis, the settlements process for recovering the costs will be undertaken on a 30 minute basis, as is preferred by the NRF.

### ***Prudential regime***

The NRF raises concerns about the applicability of the prudential regime to generators that, under the new causer pays arrangements for market ancillary services, may have to pay NEMMCO in some circumstances. The NRF notes that where no prudential cover is in place there is a credit risk to the market, and further the prudential provisions of the Code do not allow for consideration of FCAS transactions.

The Commission notes that the prudential arrangements set out in clause 3.3 of the Code refer throughout to Market Participants, and as such should apply equally to generators and retailers. Further the calculation of the maximum credit limit refers to the trading amount, and the new definition of trading amount includes FCAS spot market transactions.

However, the prudential arrangements may need to be amended to include references to ancillary service prices to mirror references to spot prices, to ensure that the impact of generator obligations in respect of the new FCAS arrangements is fully taken into account. The Commission addresses this in condition C3.10.

The NRF argues that as generators are unlikely to be assessed as having a net liability in the reasonable worst case scenario assessed by NEMMCO, but such an outcome is possible, the market faces a residual risk, not covered by the current prudential regime. However, the Commission considers that the reasonable worst case standard is designed to manage that risk, which will be small given that it exceeds the reasonable worst case. Hence any tightening of the prudential requirements to cover that risk would unnecessarily increase the barriers to entry in the market and possibly deter new entrants.

### ***Rebidding***

The Commission notes the NRF's concerns regarding the rebidding arrangements for the FCAS markets, regarding the incentive effect of the special arrangements and the lack of monitoring. The issue of FCAS market monitoring has been addressed in section 3.6.2 above, and condition C3.3 has been imposed to address the issue.

NECA states the arrangements to allow FCAS providers to rebid in situations where the co-optimisation process places them outside the technical envelope for supply of an ancillary service has been instigated to improve efficiency and competition in the supply of the service. That is by allowing a supplier to rebid, such that the co-optimisation process can consider them in the FCAS market, the competition in the FCAS markets is increased.

However, the Commission has concerns about the ability of sophisticated market participants to take advantage of the bidding and rebidding rules in order to maximise their profits. As



such, the monitoring requirements specifically require NECA to monitor energy and FCAS market interactions. The outcome of the monitoring will be used to assess the extent of rebidding and any consequent loss of efficiency or overall public benefit inherent in the proposed arrangements.

### ***Clearing price***

The NRF argues for the implementation of the markets using a pay at bid arrangement, as was originally proposed for the interim market. The Commission does not agree that such an arrangement will improve efficiency and considers that much of the benefits of moving to spot market arrangements would be eroded by the use of a pay at bid system.

In particular any move to a pay at bid arrangement will threaten the development of hedging markets, and is not likely to encourage marginal cost bidding. Such arrangements are more likely to encourage FCAS suppliers to try and predict the marginal bid and structure their bids to sit just under that bid, and in order to do so, they are likely to undertake price discovery behaviour that is costly and inefficient.

### ***Market suspension***

The provisions for market suspension specify that a market can only be suspended due to power system collapse, government intervention or other events that make it impossible to operate the spot markets. As such the Commission considers it unlikely that NEMMCO would be able to operate any of the FCAS markets or energy market independently of the other. Thus if the conditions exist such that one spot market must be suspended then it seems likely that all spot markets will have to be suspended.

However, the NRF considers that the Code is ambiguous and does not allow for the possibility of some spot markets continuing whilst others are suspended, or if such an outcome is not possible then the Code should be worded to reflect that. The Commission notes that NECA's response to the NRF implies that it would not be possible to operate any spot market if any other were suspended. Hence the Commission agrees with the NRF that a slight rewording of the Code could remove any ambiguity and has imposed condition C3.11 accordingly.

Further the Commission notes that the wording of clause 3.14.2 (c) and (d) is unclear and has imposed condition C3.12 to address this.

### ***Other matters***

The NRF has called for a number of clauses to be specified as reviewable decisions and the Commission recommends that NECA consider this issue, in order to clarify participants' rights in these matters.

The NRF also raises a number of other issues regarding ambiguities and drafting of the Code changes and these have been brought to the attention of both NECA and NEMMCO for their further consideration. Condition C3.13 addresses a drafting error noted by the Commission.

## **3.7 Summary - FCAS**

### **3.7.1 Public detriment**

The TPA (s90) requires the Commission to consider any detriment to the public constituted by any lessening of competition arising from the proposed arrangements. The proposed arrangements for FCAS introduce 8 spot markets, which will operate under similar conditions to that of the energy spot market. The current arrangements provide for potential suppliers of ancillary services to tender for contracts with the market operator NEMMCO. Participation in the FCAS spot markets will be open to all NEM participants that can meet the required technical criteria.

The Commission considers that as the proposed arrangements do not rely on long term contracts, it will be possible for NEM participants to more easily enter the FCAS markets than under the present contract arrangements, which effectively prevent new competitors participating for the life of the contracts. As such the Commission does not consider that the proposed arrangements represent a lessening of competition in the FCAS markets, in comparison to the existing arrangements.

The Commission also notes that while many submissions have disputed the likely level of benefits that may arise from the FCAS spot markets, interested parties have not claimed that there will be any lessening of competition in the FCAS markets. However, the Commission does note the potential detriment from a lessening of competition in the energy market, arising from a change on the incentives facing generators, as raised by Origin.

The Commission believes that generators may alter their behaviour as a result of the interactions between the energy and FCAS markets, although the Commission believes the significance of any such change in behaviour to be minor. Currently generators have the incentive to rebid capacity into higher price bands when they believe the market supply is relatively inelastic and any reduction in their capacity dispatched will be offset by the higher prices received for their remaining capacity. This incentive remains with the introduction of the proposed FCAS markets, and may be heightened where generators can derive a return on capacity not dispatched in the energy market by rebidding in the FCAS markets, as well as benefiting from increased prices in the energy market. However, in terms of the effect on market participants, the Commission notes that the current arrangements also allow FCAS suppliers to alter their availability, which will drive much the same outcomes.

The Commission notes that the relative sizes of the energy and FCAS markets suggests there will only be a marginal change in generator behaviour and hence considers the lessening of competition in the energy market to be insignificant.

### **3.7.2 Public Benefit**

The introduction of the market trading arrangement has the potential to deliver significant public benefits in the form of efficient and transparent prices for FCAS. Given the claimed degree of inefficiency in the current contract arrangements, efficient FCAS prices can be expected to be less than current prices. Further benefits are possible from more efficient production and investment decisions, by existing and potential FCAS suppliers. Some scope also exists for public benefits to arise from better determination of FCAS requirements by

NEMMCO, and a more informed energy usage decisions by end users that take into account FCAS impacts.

The extent to which these benefits are realised will depend largely on the effectiveness of competition between FCAS suppliers. The degree of competition is in turn impacted by the complexity of the arrangements, as well as the existing structure of the market. The costs of risk management will also impact on prices and affect the overall public benefit. Finally the cost allocation may lead to a lessening of potential benefits, if it delivers ineffectual or perverse incentives.

### **3.7.3 Comparison of public detriment and benefit**

Overall the Commission believes that the expected benefit to the public arising from greater efficiencies in the investment, production and use of FCAS is such that authorisation should be granted, subject to the conditions discussed in section 3.6 and set out below. Further the Commission believes that the expected benefit to the public will outweigh the public detriment arising from the possibility of a lessening of competition in the related energy market.

## **3.8 Conditions of authorisation**

C3.1 Clause 3.1.4(a1) of the Code must be amended as follows:

- (a) delete the requirement to publish the report as specified in clause 3.1.4(a1)(1) by 30 November 2001;
- (b) the matters identified in the NEMMCO report of October 1999 to NECA, that are to be reviewed by NEMMCO, must be identified in the Code;
- (c) NEMMCO must also review the operation of the 8 FCAS markets, and identify any alternative specification that may reduce the complexity of the arrangements;
- (d) each review may be undertaken as separate process, where appropriate;
- (e) NEMMCO must publish a program for the conduct of the reviews within 3 months of the commencement of the FCAS spot markets, setting out an indicative starting date or reference event that will trigger the commencement of each review;
- (f) the start date of each review must balance the need to utilise the results of other reviews or market experience against the need to progress market development;
- (g) NEMMCO must produce a review outline and indicative timelines at the commencement of each review;
- (h) NEMMCO must use the Code consultation procedures in conducting each review, and give other interested parties, including end user representatives, an opportunity to participate (through the consultation process or by representation on working groups) in each review; and

- (i) NEMMCO should complete each review, by submitting a report to NECA, within 12 months of its commencement. The report to NECA must be made available to all Code participants and interested parties. Where required, proposed Code changes arising from the reviews must be submitted to NECA within 3 months of the report being complete.
- C3.2 Clause 2.11.1(b) must be amended to allow the annual fixed fee to be set to zero where a market customer registers with NEMMCO solely for the purpose of participating in the FCAS markets, and does not participate in the energy market.
- C3.3 The Code must be amended to require NECA to undertake monitoring and reporting on the FCAS markets. NECA must issue weekly reports on FCAS markets, and the reports must be made available to all market participants and interested parties. NECA must be able to access bidding, rebidding, and dispatch data for all FCAS market transactions (and if necessary energy market transactions) and as part of its monitoring should review:
- (a) FCAS prices;
  - (b) FCAS capacity offered;
  - (c) Participation, new entry and market share;
  - (d) FCAS and energy market interactions; and
  - (e) any other market related matters.
- C3.4 The Code must be amended to require NECA, in consultation with NEMMCO, to undertake a detailed analysis of the outcomes of the FCAS spot markets. The analysis must:
- (a) use at least 12 months worth of data from the operation of the FCAS spot markets;
  - (b) commence within 18 months from the date of the commencement of the FCAS spot markets;
  - (c) consider spot market outcomes, as well as outcomes seen by end-users;
  - (d) estimate all relevant benefits for market participants, and end-users; and
  - (e) consider any impediments to the realisation of benefits, including impediments arising from market structure, market design, market rules and retail market arrangements.

The analysis must be completed within 8 months. A report detailing the results of the analysis must be made available to all market participants and any interested parties. NECA and NEMMCO must jointly review the results of the market analysis and publish a further report, within 4 months, outlining the implications for ongoing ancillary services market development, and NEMMCO must take that report into account in its market development program, as required by C3.1.

- C3.5 The Code must be amended to require that NEMMCO's reviews regarding the development of two-way markets for FCAS or spot market trading for NCAS, must not commence until the report by NECA and NEMMCO, as required by condition C3.4 on the outcome of the analysis of FCAS spot market trading, is published.
- C3.6 The Code must be amended to require NEMMCO to provide all market participants with:
- (a) one week forward estimates of requirements for each FCAS;
  - (b) information on factors that may impact on each FCAS requirement, such as forecast generator or interconnector outages, and forecast system demand; and
  - (c) information on changes in FCAS requirements, as soon as possible after NEMMCO becomes aware a change has occurred.
- C3.7 Clause 3.15.6A(k) must be amended to replace the each occurrence of the phrase 'deviation in the frequency of the power system' with the phrase 'need for regulation services'.
- C3.8 Clause 3.11.8(c)(1) must be amended such that the factors determined in accordance with clause 3.15.6A(j) must be fixed for a period of one calendar month, for the first 12 months of operation of the FCAS spot markets. Market participants must be notified of updated factors at least 2 weeks prior to the factors being applied.
- C3.9 The Code must be amended to require NEMMCO, in accordance with the Code consultation procedures, to design and implement procedures for assessing the accuracy and improving its determination of FCAS requirements.
- C3.10 Clause 3.3 of the Code must be amended to ensure that where appropriate references to spot prices also include references to ancillary service prices.
- C3.11 Clause 3.14.3 must be amended to specify that if NEMMCO declares the spot market to be suspended in a region then all spot markets in the region must be declared to be suspended.
- C3.12 Clause 3.14.2(c) and (d) must be amended to clarify the wording and intent of the clauses.
- C3.13 Clause 2.3.5(f) must be amended to refer to Market Customers.

## 4. Network control ancillary services

Network control ancillary services (NCAS) are those services that allow NEMMCO to control the voltage, loading and stability of the power system, which supports the ability of generators and customers to access the interconnected network. NCAS can also be used to increase the power transfer capability between regions.

In the calendar year 2000 NEMMCO spent around \$50m on NCAS, representing around 20% of total ancillary service payments by NEMMCO, or around 1% of the value of the energy market.<sup>23</sup> Since interconnection with Queensland these costs remained at around \$1m/week, but now represent approximately 40% of total ancillary service costs over that period.<sup>24</sup>

### 4.1 Proposed arrangements

The proposed arrangements classify NCAS as a non-market ancillary service and set out a continuation of current arrangements whereby NCAS are supplied through three mechanisms:

- mandatory supply of reactive power by generators – specified in connection agreements;
- TNSP provision of NCAS; and
- additional NCAS procured by NEMMCO through ancillary service contracts.

The Code changes propose that NEMMCO will procure additional NCAS through an ITT process, similar to the process currently undertaken. The ITT process allows NEMMCO to specify the required service quantities and technical criteria, in accordance with the standards specified by the Reliability Panel. The ITT process allows NEMMCO to choose between competing suppliers. However, where the ITT process is deemed to be non-competitive, negotiation may take place between NEMMCO and each potential supplier of NCAS, with scope for independent arbitration to be used to finalise contract details.

No changes are proposed in respect of the mandatory supply of reactive power or the provision of NCAS by TNSPs.

Costs of NCAS procured by NEMMCO through the ITT process will be recovered wholly from market customers. TNSPs will recover the costs of NCAS that they supply through the existing regulated revenue regime. Generators are expected to bear the costs of mandatory supply of reactive power, without an explicit payment from NEMMCO.

The proposed Code changes also provide for a review of ancillary service arrangements, including the potential for developing NCAS markets. The review is to be undertaken by NEMMCO before 30 November 2001.

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<sup>23</sup> These estimates reflect the payments by NEMMCO for NCAS and may understate the total value of NCAS as they do not include the value of mandatory reactive power provided by generators, nor the value of NCAS provided by TNSPs. Further the Commission has assumed that load shedding ancillary services are used for both FCAS and NCAS, half the cost of those services is attributed to NCAS. Refer to Table 2.1.

<sup>24</sup> Refer to Table 2.2.

The proposed Code changes also allow for contracts entered into under the provisions of the Chapter 9 ancillary services derogations to continue after the commencement of the new ancillary services arrangements.

## **4.2 Issues for the Commission**

The centralised procurement of NCAS, the requirement for NEMMCO to specify minimum technical standards and the requirement for NEMMCO to only procure for NCAS with Code participants may be taken to be:

- Exclusive dealing provisions, as participants trade in the NEM on the basis that NEMMCO will only procure NCAS from Code participants; or
- Provisions substantially lessening competition, where the technical requirements and other NEM entry requirements create a barrier to entry to the NCAS market or decreases competition in the NCAS market.

## **4.3 What the applicant says**

NECA notes that the overlap between regulated TNSPs and NCAS requirements makes the development of NCAS markets the most complex and administratively difficult of all the ancillary services. Thus while NECA implicitly supports the ongoing provision of NCAS through the ITT contract based arrangements, and mandatory provision of services by generators, NECA also recognises that further work could be undertaken in order to develop NCAS markets.

## **4.4 What the interested parties say**

Macquarie Generation supports the proposed changes to the NCAS arrangements.

Tarong Energy, Hazelwood and Loy Yang Power do not support the continued mandatory provision of reactive power from market participants. Their position reflects that of the NGF. The NGF, in its submission to NECA, opposes the continued mandatory provision of reactive power, and argues such provision is at odds with the principles espoused by the ASRG. The NGF states that a firm timetable is needed for the introduction of market based arrangements for NCAS (including reactive power).

EMEAL notes that the change in cost allocation methodology is likely to lead to increased market efficiency, but considers that most efficient charging mechanism would be to levy NCAS costs on TNSPs, who benefit from the provision of NCAS.

TransGrid supports the review of NCAS arrangements on the basis that it is undertaken in close consultation with TNSPs under the auspices of the Market and System Operation Review Committee (MSORC). However, TransGrid argues that any assumption that NCAS provision must be entrepreneurial in the future is not soundly based.

TransGrid argues that NEMMCO should not be able to set the minimum technical standards for ancillary services to be contained in connection agreements, and would prefer the minimum standards to be defined in the Code. TransGrid has concerns about the impact that

changes in minimum standards may have upon parties to connection agreements, and in particular the impact the any changes may have in regard to existing connection agreements.

The NRF supports the ongoing provision of NCAS through contract based arrangements, and argues that any review or development of the NCAS market should be delayed until after the FCAS markets and full retail contestability have been fully implemented. The NRF also has concerns about the wording of the Code changes in chapter 3 of the Code, and argues there is ambiguity about the application of chapter 3 of the Code to non-market ancillary services, such as NCAS. The NRF's concerns include clarifying the incentives on NEMMCO minimise costs under future contracting arrangements.

The EUAA has concerns about the allocation of NCAS costs, in particular the exclusion of TNSPs from the allocation, given that network outages contribute significantly to NCAS requirements. Integral argues that NSPs not NEMMCO should provide NCAS.

The EUAA notes the Commission is being asked to endorse a series of uncoordinated Code changes, all of which combined will impact on end-users in ways not clearly defined in individual Code Change proposals.

EnergyAustralia argues that the frequency standards imposed by the Reliability Panel inflate the NCAS market values, leading to potentially higher costs associated with the provision of NCAS.

#### **4.5 Issues arising from the draft determination**

Tarong Energy notes that NCAS is a location specific service and raises the issue of altering the NCAS cost allocation to take into account regional costs, rather than whole of NEM costs. Southern Hydro supports that proposal for a regional cost allocation for NCAS. However SHT argues that there are significant inter-regional elements of NCAS and hence changing the cost allocation to a regional basis is inappropriate. Further Snowy argues that as a significant provider without any native load in its region, such a change would leave SHT with no means of recovering its NCAS costs.

Stanwell notes its continued opposition to the mandatory provision of reactive power by generators, but supports the proposal to address the issue after other relevant reviews have been completed. At that time Stanwell urges that the NCAS cost allocation be undertaken on a beneficiaries pay basis.

#### **4.6 Commission considerations**

The proposed Code changes do not represent any major change to the current system of procurement of NCAS, despite the work undertaken by the ASRG. Further the Commission notes a number of reviews may impact upon the future provision of NCAS, including:

- the review of the integration of network services and energy markets;
- the market and system operator review;
- the Code change process arising from the network pricing review; and



- the review of the treatment of constraints in the market.

Rather than pre-empt the outcome of these reviews, the changes to the Code allow for a continuation of the current process for provision of NCAS from three sources, but modifies the who pays arrangements for NEMMCO procurement of NCAS, to reflect a broad level causer pays allocation of costs. Further, the review provisions allow for the development of NCAS markets to be undertaken in the future.

The Commission discusses the current review arrangements in detail in section 3.6, above. The Commission has imposed conditions of authorisation addressing the conduct and timing of the review provisions (Conditions C3.1 and C3.4). The Commission considers that the review provisions need to exactly specify the ongoing review requirements in respect of NCAS. However, in relation to NCAS the ancillary services review will need to encompass the outcomes of the other reviews listed above, and in particular the outcomes of the MSORC.

The MSORC is considering the most appropriate allocation of roles between NEMMCO, as the system operator, and TNSPs as service providers. The outcome of this review will determine which agency should be responsible for procuring NCAS, dispatching NCAS, recovering the costs of NCAS and determining the most appropriate methodology for recovering the costs.

The network constraints review has considered how best to formulate constraints under the current provisions of the Code, but further work is proposed regarding possible changes to the Code that will impact on the formulation of network constraints.

Further the Commission has imposed a condition of authorisation requiring a review of the benefits achieved by moving to spot market arrangements in FCAS, and the outcome of that review, in respect of any underlying structural problems, is also relevant to any future development of NCAS markets. Therefore, in terms of timing, any review considering possible market arrangements or future development for NCAS will have to commence after the outcomes of other relevant reviews are known.

The Commission is advocating that market development work in ancillary services needs to be coordinated with all market development work currently being undertaken. An assessment of the potential impact of the various reviews upon each other needs to be made explicit, including proposed changes and likely timing of reports and implementation of outcomes. As such the Commission recognises that it may be necessary to accommodate the outcomes of other reviews in the planning and implementation processes of the ongoing ancillary services review.

### ***Cost allocation***

The Commission fully supports the proposal to introduce a causer pays arrangement for ancillary services. The Commission believes that such an arrangement will lead to increased market efficiency by attributing costs to the parties that can best act to minimise the costs, and in doing so, minimise the overall need for ancillary services in the NEM. However, NECA's consultants, LECG, note in their review of the cost allocation arrangements that:

The structure recommended by NEMMCO for allocating [NCAS] charges does not appear to result from a careful and coherent framework that has as its objective the creation of incentives to minimise costs overall.

Thus, it appears that the proposed arrangements are considerably less than ideal, and require significant work to be undertaken. The Commission also notes that any ongoing development could consider allocating costs on a regional basis, as suggested by Tarong, or a shift to a beneficiaries pays cost allocation, as suggested by Stanwell. However, as stated above, the Commission considers that it is appropriate to await the outcome of the relevant reviews and allow for the development of a better cost allocation methodology once the regulatory and commercial framework is settled.

The Commission notes the NRF's concerns regarding the cost minimisation incentive on NEMMCO but considers the provisions of clause 3.11.5(d1)(1) clearly impose a cost minimisation requirement upon NEMMCO.

## **5. System restart ancillary services**

System restart ancillary services (SRAS) are necessary to enable NEMMCO to restore the power system in an orderly manner after a severe interruption to supply has occurred.

SRAS include the ability of generators to start and synchronise their generating unit(s) without importing energy from the power system. The service providers must also be able to export to the power system to enable other generating units to start up, and eventually restore power across the whole system.

Such services are required in discreet locations across the whole power system, and must also allow for load to be taken off the system in order to maintain the required voltage.

SRAS costs in the NEM were around \$12million in the year 2000, around 5% of total ancillary service charges, and less than 1% of total energy charges.<sup>25</sup> Since interconnection with QNI SRAS costs have remained at less than \$0.3million per week, approximately 8% of total ancillary service costs.<sup>26</sup>

### **5.1 Proposed arrangements**

The Code changes propose that SRAS will be centrally procured by NEMMCO, through an ITT process. Where the ITT process is deemed to be non-competitive, negotiation may take place between NEMMCO and the potential suppliers of SRAS, with scope for independent arbitration to be used to finalise contract details.

The changes provide for half the costs of SRAS to be recovered from generators and half the costs to be recovered from market customers, in proportion to their energy trading.

The changes also allow for contracts entered into under the provisions of Schedule 9G to continue after the commencement of the new ancillary services arrangements.

### **5.2 Issues for the Commission**

The centralised procurement of SRAS, the requirement for NEMMCO to specify minimum technical standards and the requirement for NEMMCO to only procure SRAS from Code participants may be taken to be:

- Exclusive dealing provisions, as participants trade in the NEM on the basis that NEMMCO will only procure SRAS from Code participants; or
- Provisions substantially lessening competition, where the technical requirements and other NEM entry requirements create a barrier to entry to the SRAS market or lessens competition in the SRAS market.

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<sup>25</sup> Refer to Table 2.1.

<sup>26</sup> Refer to Table 2.2.

### **5.3 What the applicant says**

NECA supports the ongoing procurement of SRAS through an ITT and notes that the scope for competitive supply of SRAS services is extremely limited. NECA states that some form of arbitration may be needed to determine contract conditions. NECA's consultant reviewed the cost allocation proposals and supported the allocation of SRAS costs over as broad base as possible.

### **5.4 What the interested parties say**

NRF supports the ongoing contract market for SRAS, as appropriate to the current trading environment, including allowing for NEMMCO to establish a portfolio of SRAS contracts. The NRF states that minimisation of total cost to the market should be the primary motivator, and supports the inclusion of arbitration on contract outcomes.

Macquarie Generation notes that SRAS is the least costly component of ancillary services and goes on to state that it is unlikely that a more market based solution would provide any net benefit to end users due to establishment and transaction costs. Macquarie Generation supports the ongoing contract basis for procuring SRAS.

The EUAA states that it considers the proposed cost allocation for SRAS is wrong, as generators are the entities that are most able to reduce costs, and hence SRAS should be recovered 100% from generators, rather than from both generators and customers. The EUAA notes that customers are unlikely to be causers of a need for SRAS.

EMEAL and Hazelwood consider the cost allocation of SRAS is arbitrary and without sound analysis. The allocation of half of SRAS costs to generators in fact deviates from the 'optimal tax theory' position of attributing the cost as broadly as possible. The cost allocation to generators actually concentrates the charges on a small number of players, in contrast to what it is supposed to achieve. EMEAL states that contrary to the assessment by LECG, imposing half the costs of SRAS upon generators, who will pass the costs back to customers through the energy price, will result in a loss of allocative efficiency and an increased deadweight loss.

Further Hazelwood states that the cost to generators is capped at \$VoLL/MWh, whereas the cost to some end users of a widespread market failure may be as high as \$90000/MWh. Hazelwood also argues that the technical requirements for connection impose costs on generators for the avoidance of restart, and hence charging generators for market re-establishment is a double charge. Hazelwood states that the charging proposal for SRAS does not provide incentives to lower costs nor minimise distortions to production, consumption or investment decisions.

Loy Yang Power supports the NGF position that customers as the ultimate beneficiaries of the power system should bear the bulk of the costs incurred in maintaining a system restart capability.

### **5.5 Issues arising from the draft determination**

EMEAL notes the highly locational nature of SRAS services and suggests that the cost allocation should be amended and re-allocated on a regional basis. Tarong Energy and

Southern Hydro support a regional cost allocation for SRAS. However SHT argues that there are significant inter-regional elements of SRAS and hence changing the cost allocation to a regional basis is inappropriate. Further SHT argues that as a significant provider without any native load in its region, such a change would leave SHT with no means of recovering its SRAS costs.

EMEAL also reiterated their concerns about the underlying justification used by NECA to support the 50:50 cost allocation for SRAS. In particular EMEAL claims that the application of optimal tax theory is flawed, and does not take into account any likely response by generators when considering the impact of the 50:50 cost allocation. When generator response is taken into account, EMEAL argues that the optimal outcome is to levy the tax (SRAS costs) solely on customers.

In response to EMEAL's discussion, the EUAA argued that optimal tax theory was not the correct basis for allocating costs, and that costs should be allocated to those best able to control them – that is solely to generators, who are the suppliers of SRAS.

## **5.6 Commission considerations**

The Commission notes the widespread support for the continuation of the centralised procurement of SRAS through a contract market. The Commission considers that SRAS has strong public good characteristics, in that all participants in the NEM, and further all end users that source their electricity from the interconnected power system, will benefit from NEMMCO's ability to restore the power system in the event of widespread system failure. However, the global benefits that arise would be likely to result in under-provision of SRAS if it is left to individuals to provide or contract for such services.

The Commission considers that there are significant public benefits that arise from having the ability to restore the power system in a coordinated and orderly manner, and hence the Commission supports the centralised procurement of SRAS by NEMMCO.

The Commission considers that the requirements for providers of SRAS to meet technical standards as specified by NEMMCO will have little impact on the effective level of competition in the SRAS market. The Commission notes that the Code also allows for NEMMCO to contract for SRAS with non-Code participants, where the counter party to the contract agrees to become a Code participant prior to the supply of any ancillary services. The Commission considers that this requirement potentially broadens the possible number of SRAS suppliers but also ensures that actual suppliers of SRAS are bound to the Code. The Commission recognises that having SRAS suppliers bound to the Code, and hence facing obligations to comply with directions and instructions issued by NEMMCO, will increase confidence in the ability of NEMMCO to restore the power system.

The Commission considers that confidence in NEMMCO's ability to restore the power system is a major benefit of SRAS. Hence, in order to increase that confidence the Commission considers that NEMMCO's plans and procedures for system restart should be open to public scrutiny. Currently the Code does not require NEMMCO to make public its system restart procedures. Further, the Commission is aware that TNSPs have a vital role in the provision of restart services, and NEMMCO may have issues of confidentiality in respect to contracts with TNSPs to consider before making public its system restart plans. The

Commission understands that the procurement of SRAS through contracts also imposes some confidentiality restrictions on the information that NEMMCO could make available.

However, the Commission is of the view that to some extent the confidentiality requirements may be artificial, especially where there are limited options for supply of SRAS. Hence, the Commission considers that market confidence could be enhanced by the availability of system restart plans and strongly recommends that NEMMCO and all market participants consider the need for more transparent procedures regarding system restart.

The Commission notes that the MSORC review of the roles of NEMMCO and the TNSPs is currently being undertaken by the jurisdictions. The Commission considers it appropriate that issues such as the allocation of responsibility for SRAS, and the degree of public scrutiny of SRAS plans and procedures be considered in that forum.

SRAS are procured through an ITT process, where the tender documents specify the requirements. The ITT process allows for contract negotiations to take place if the resultant tender is considered to be non-competitive, and further allows for the dispute provisions of Chapter 8 of the Code to be used to resolve negotiations between NEMMCO and potential suppliers. The Commission supports these arrangements as allowing for competition where possible, but also providing a relatively simple process to finalise contracts for SRAS.

### *Cost allocation*

The Commission notes that SRAS costs are of the order of \$280,000 per week since 1 July 2000, which now represents around 8% of the average weekly ancillary service charges for the whole NEM. The Commission notes that notwithstanding the relatively small size of the SRAS costs, views about the most appropriate cost allocation are polarised.

At this stage the Commission does not support the calls for revising the cost allocation on regional grounds, partly due to the increased level of complexity that such a process could introduce, which may not be warranted given the relative size of SRAS costs. Further, given the lack of public information about plans for restarting different regions and the whole of the NEM, it may be difficult to determine which SRAS costs should be billed to which NEM participants, especially if inter-regional flows were to be used to restore the system.

The discussion by EMEAL argues that the application of optimal tax theory is flawed by not considering likely generator responses to the imposition of SRAS costs. However, as evidenced by discussion at the PDC, a number of economic theories could be applied to determine the cost allocation, each driving an outcome that suits the best interests of its proponents.

The Commission considers that given the public good features of SRAS the cost allocation should be spread as broadly as possible.

The Commission does not accept the EUAA's contention that the costs should only be levied on generators, as the Commission considers that all of those connected to the power system benefit from NEMMCO's ability to restart the power system.

The Commission notes the arguments of EMEAL and Hazelwood that by allocating half of the costs of SRAS to market generators the cost allocation is too narrowly based. Further, given that generators will pass through the costs by increasing their energy charges, EMEAL and Hazelwood argue that a less distortionary option is to simply levy all end users.

The Commission agrees that if it were possible to optimally allocate the costs then all end users, as well as generators would be included in the allocation. However, the extension of the cost base beyond market participants is only possible through the ability of market participants to pass costs on to end users. The Commission considers that the allocation of costs to both generators and market customers, representing the broadest possible cost base in the NEM, is appropriate.

Further the Commission supports this cost allocation as a relatively administratively simple allocation, appropriate to the actual proportion of costs that SRAS represent.

The Commission does not accept Hazelwood's contention that as the technical requirements for connection impose costs upon generators this implies generators should be exempt from paying for SRAS. Rather the Commission considers that the SRAS payments are quite a separate consideration to minimum technical requirements, and Hazelwood must take up the issue of generator technical requirements separately to payments for ancillary services.

## **6. Other issues**

### **6.1 Ancillary services costs**

The EUAA strongly expresses its concerns regarding rising ancillary services costs in the NEM, in absolute terms and as a proportion of total market charges for electricity. In particular the increase in ancillary service costs since the commencement of the NEM is taken to be a manifestation of generator market power. The EUAA notes that ancillary service costs in the NEM are of the order of 4%, compared to 2-3% in other markets.

The Commission notes the concerns of the interested parties, but considers that the high prices underpinning the ancillary services contracts currently in place are influenced by a number of factors, including the current cost allocation and the locking in of prices for long periods. In particular, it is possible that generators have chosen to recover their ancillary service obligations through the ancillary service market, rather than the energy market, thus inflating their contract prices. Thus the current cost allocation may be directly responsible for high ancillary service prices.

The Commission supports the move to a causer pays cost allocation regime and considers that if the implementation of the proposed FCAS markets is delayed beyond 31 August 2001, then any extension of the contract based arrangements should consider adopting a causer pays cost allocation, to the extent possible.

Further, the Commission notes that many market participants expect the costs of ancillary services to fall, especially FCAS, in the advent of QNI, as QNI effectively reduces the total requirement and increases the number of service providers. This expectation seems to have been substantiated, with 15 weeks data, from mid February (when QNI was commissioned) to mid May, showing a fall in overall ancillary service costs of around \$3million per week, stemming from FCAS cost reductions.

### **6.2 Inclusion of principles**

The ASRG developed a set of principles to underpin the ongoing development of the ancillary service arrangements in the NEM.

TransGrid states that it is fundamentally opposed to the inclusion of the Statement of Principles in the Code at this time, as it may pre-empt outcome regarding future NCAS arrangements and may not be the best direction for the market to follow.

The Commission considers that the inclusion of the ASRG principles in the Code can provide a reasonable guide for ongoing development of ancillary service arrangements, but notes that many of the principles are subjective, and some reiterate other provisions in the Code. Specifically the Commission considers clause 3.8.1(b) adequately specifies the underlying principle for central dispatch, that is maximising the value of spot market trading, and has imposed condition C6.1 to remove the duplicate clause 3.1.4(a)(11) from the Code. Further the Commission considers the principle regarding information transparency is adequately addressed by clause 3.1.4(a)(2) and does not need to be reiterated in 3.1.4(a)(10).



While the Commission considers that efficient competitive market arrangements may represent an ideal, this must be tempered by the more pragmatic consideration of implementation of such arrangements. Further, the submissions received by the Commission in response to these current applications for authorisation, demonstrate that both efficient and competitive are concepts that can have quite different meanings to different interest groups. Thus while the Commission supports the principles of efficient competitive markets, it must be recognised that it will not always be possible to clearly demonstrate how a particular market design meets these objectives in practise.

### **6.3 Transitional work**

The Commission notes that NEMMCO has undertaken a significant amount of work in order to establish the new ancillary services arrangements concurrent with the authorisation process. NEMMCO initiated this work in order to enable it to be completed before the authorisation of the existing ancillary service arrangements expires. This work used the Code changes submitted to the Commission as its basis, similar to the work that was done prior to the initial authorisation of the Code at the start of the NEM. Therefore, in order for the work done to be valid a transitional clause is required in the Code.

Clause 3.11.8(b) goes some way to ensuring that the Code consultations that have been undertaken are considered to meet the Code, even though conducted prior to the relevant Code coming into effect, but NEMMCO has raised concerns about the adequacy of the clause.

The Commission considers that this clause should be amended by NECA to ensure that the actions taken by NEMMCO in relation to the development of the new ancillary services arrangements are not invalidated by the fact of their being taken before the relevant provisions of the Code came into effect. Condition C6.2 addresses this issue.

### **6.4 Typographical errors**

NEMMCO has provided the Commission with two submissions<sup>27</sup> in respect of typing errors in the current set of Code changes. The proposed changes have been suggested in order to clarify the intent of the Code, not alter the intent of the Code and as such, the Commission considers there is a clear benefit in introducing the changes before new arrangements set out the Code are implemented.

Therefore the Commission has decided to impose a condition of authorisation (C6.3) that requires the Code corrections notified by NEMMCO to be introduced to the Code. However, as a safeguard, the Commission also requires that NECA should scrutinise the changes and ensure that they do not materially impact on the intent of the proposed Code changes.

#### ***Conditions of authorisation***

C6.1 Clauses 3.1.4(a)(10) and 3.1.4(a)(11) must be deleted from the Code.

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<sup>27</sup> The submissions are available from the Commission's public register, and on the Commission's web page. The submissions are dated 12/12/2000 and 22/5/2001. The later submission includes the errors noted in the earlier submission.

- C6.2 Clause 3.11.8(b) must be amended by NECA to ensure that the actions taken by NEMMCO in relation to the development of the new ancillary services arrangements are not invalidated by the fact of their being taken before the relevant provisions of the Code come into effect.
- C6.3 The Code must be amended to incorporate the typographical errors noted by NEMMCO in its submission of 22/5/2001, if NECA is satisfied that the amendments proposed by NEMMCO do not materially alter the intent of the Code changes submitted to the Commission for authorisation.

## 7. Determination

The Commission considers that the proposed spot markets for FCAS and the continuation of contract based arrangements for NCAS and SRAS do not give rise to any significant public detriment due to a lessening of competition. Further, for the reasons outlined in sections 3-6, the Commission concludes that, subject to the conditions set out below, in all the circumstances the proposed ancillary services arrangements and conduct:

- are likely to result in a benefit to the public which outweighs the potential detriment from any lessening of competition that would result if the proposed conduct or arrangements were made, or engaged in; and
- are likely to result in such a benefit to the public that the proposed conduct or arrangements should be allowed to take place or be arrived at.

The Commission proposes to grant conditional authorisation to applications A90742, A90743 and A90744 as amended on 2 November 2000. This authorisation will expire on 31 December 2010.

The authorisation that the Commission proposes to grant is subject to the following conditions:

C3.1 Clause 3.1.4(a1) of the Code must be amended as follows:

- (a) delete the requirement to publish the report as specified in clause 3.1.4(a1)(1) by 30 November 2001;
- (b) the matters identified in the NEMMCO report of October 1999 to NECA, that are to be reviewed by NEMMCO, must be identified in the Code;
- (c) NEMMCO must also review the operation of the 8 FCAS markets, and identify any alternative specification that may reduce the complexity of the arrangements;
- (d) each review may be undertaken as separate process, where appropriate;
- (e) NEMMCO must publish a program for the conduct of the reviews within 3 months of the commencement of the FCAS spot markets, setting out an indicative starting date or reference event that will trigger the commencement of each review;
- (f) the start date of each review must balance the need to utilise the results of other reviews or market experience against the need to progress market development;
- (g) NEMMCO must produce a review outline and indicative timelines at the commencement of each review;
- (h) NEMMCO must use the Code consultation procedures in conducting each review, and give other interested parties, including end user representatives,

an opportunity to participate (through the consultation process or by representation on working groups) in each review; and

- (i) NEMMCO should complete each review, by submitting a report to NECA, within 12 months of its commencement. The report to NECA must be made available to all Code participants and interested parties. Where required, proposed Code changes arising from the reviews must be submitted to NECA within 3 months of the report being complete.

C3.2 Clause 2.11.1(b) must be amended to allow the annual fixed fee to be set to zero where a market customer registers with NEMMCO solely for the purpose of participating in the FCAS markets, and does not participate in the energy market.

C3.3 The Code must be amended to require NECA to undertake monitoring and reporting on the FCAS markets. NECA must issue weekly reports on FCAS markets, and the reports must be made available to all market participants and interested parties. NECA must be able to access bidding, rebidding, and dispatch data for all FCAS market transactions (and if necessary energy market transactions) and as part of its monitoring should review:

- (a) FCAS prices;
- (b) FCAS capacity offered;
- (c) Participation, new entry and market share;
- (d) FCAS and energy market interactions; and
- (e) any other market related matters.

C3.4 The Code must be amended to require NECA, in consultation with NEMMCO, to undertake a detailed analysis of the outcomes of the FCAS spot markets. The analysis must:

- (a) use at least 12 months worth of data from the operation of the FCAS spot markets;
- (b) commence within 18 months from the date of the commencement of the FCAS spot markets;
- (c) consider spot market outcomes, as well as outcomes seen by end-users;
- (d) estimate all relevant benefits for market participants, and end-users; and
- (e) consider any impediments to the realisation of benefits, including impediments arising from market structure, market design, market rules and retail market arrangements.

The analysis must be completed within 8 months. A report detailing the results of the analysis must be made available to all market participants and any interested parties. NECA and NEMMCO must jointly review the results of the market analysis and publish a further report, within 4 months, outlining the implications for ongoing

ancillary services market development, and NEMMCO must take that report into account in its market development program, as required by C3.1.

- C3.5 The Code must be amended to require that NEMMCO's reviews regarding the development of two-way markets for FCAS or spot market trading for NCAS, must not commence until the report by NECA and NEMMCO, as required by condition C3.4 on the outcome of the analysis of FCAS spot market trading, is published.
- C3.6 The Code must be amended to require NEMMCO to provide all market participants with:
- (a) one week forward estimates of requirements for each FCAS;
  - (b) information on factors that may impact on each FCAS requirement, such as forecast generator or interconnector outages, and forecast system demand; and
  - (c) information on changes in FCAS requirements, as soon as possible after NEMMCO becomes aware a change has occurred.
- C3.7 Clause 3.15.6A(k) must be amended to replace the each occurrence of the phrase 'deviation in the frequency of the power system' with the phrase 'need for regulation services'.
- C3.8 Clause 3.11.8(c)(1) must be amended such that the factors determined in accordance with clause 3.15.6A(j) must be fixed for a period of one calendar month, for the first 12 months of operation of the FCAS spot markets. Market participants must be notified of updated factors at least 2 weeks prior to the factors being applied.
- C3.9 The Code must be amended to require NEMMCO, in accordance with the Code consultation procedures, to design and implement procedures for assessing the accuracy and improving its determination of FCAS requirements.
- C3.10 Clause 3.3 of the Code must be amended to ensure that where appropriate references to spot prices also include references to ancillary service prices.
- C3.11 Clause 3.14.3 must be amended to specify that if NEMMCO declares the spot market to be suspended in a region then all spot markets in the region must be declared to be suspended.
- C3.12 Clause 3.14.2(c) and (d) must be amended to clarify the wording and intent of the clauses.
- C3.13 Clause 2.3.5(f) must be amended to refer to Market Customers.
- C6.1 Clauses 3.1.4(a)(10) and 3.1.4(a)(11) must be deleted from the Code.
- C6.2 Clause 3.11.8(b) must be amended by NECA to ensure that the actions taken by NEMMCO in relation to the development of the new ancillary services arrangements are not invalidated by the fact of their being taken before the relevant provisions of the Code come into effect.

C6.3 The Code must be amended to incorporate the typographical errors noted by NEMMCO in its submission of 22/5/2001, if NECA is satisfied that the amendments proposed by NEMMCO do not materially alter the intent of the Code changes submitted to the Commission for authorisation.

## APPENDIX A - List of Submissions

### Initial submissions:

Edison Mission Energy Australia Limited	Macquarie Generation
EnergyAustralia	National Retailers' Forum <sup>28</sup>
Energy Users' Association of Australia	NEMMCO
Hazelwood Power	Southern Hydro
Integral	Tarong Energy
Loy Yang Power	TransGrid

### Submissions in response to the draft determination:

CS Energy/Enertrade	NEMMCO
Energy Users' Association of Australia	Origin Energy
Eraring	Snowy Hydro Trading
Hazelwood	Southern Hydro
Integral	Stanwell
National Retailers' Forum <sup>29</sup>	State Electricity Commission of Victoria

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<sup>28</sup> The members of the NRF that support the submission are: ACTEW Energy, Advance Energy, AGL (including AGL South Australia), Energex Retail, EnergyAustralia, Ergon Energy, Great southern Energy, Integral Energy, Origin Energy, Powercor Australia, Australian Inland Energy, United Energy.

<sup>29</sup> The members of the NRF that support the submission are: ACTEW AGL, Advance Energy, AGL (including AGL South Australia), Australian Inland Energy and Water, Energex Retail, EnergyAustralia, Ergon Energy, Great southern Energy, Pulse Energy, TXU.

## APPENDIX B - Differences in Ancillary Service Definitions - Australia, UK, US and New Zealand\*

Service Description	NEMMCO/INECA Proposal	UK Equivalent	US Equivalent	NZ Equivalent
<b>Scheduling, System Control and Dispatch Service</b>	Not defined as ancillary service.	AS procured by NGC through competitive tender and bilateral contracts. Changes proposed to increase incentive and align with end-user interests.  Not defined as ancillary service.	AS procured in competitive markets and bilateral contracts in New England, New York, California and PJM. Considerable effort to address market deficiencies.  Ancillary service mandated by FERC Order No 888.	AS procured by Transpower through competitive tender and bilateral contracts. Changes proposed to clarify and increase incentive to reduce costs.  Not defined as ancillary service.
<b>Frequency Control Ancillary Service (FCAS)</b>	<b>Continuous services - Regulation Raise:</b> Equivalent to existing 5-minute Raise co-optimised service.	<b>Frequency Response - Continuous Response:</b> Provided automatically by generators and demand via governors.	<b>Regulation and Frequency Response Service:</b> The capability of a specific generating unit (or load) with appropriate telecommunications, control and response capability to increase or decrease its output in response to a regulating control signal within five minutes.  Various called <i>Regulation</i> or <i>Automatic Generator Control</i> in different US markets. Procured in competitive markets in ISO-NE, NYISO, and CAISO. CAISO moved to <i>Rational Buyer</i> protocol and two part <i>Regulation-Raise</i> and <i>Regulation-Lower</i> markets in August 1999.  PJM introduced a competitive <i>Regulation</i> market on 1 June 2000 with incentive mechanism to counter adverse effects of differential <i>Regulation</i> and energy price cap. Around 60% provided by Load Serving Entities through bilateral contract and self-scheduling (includes unspecified demand-side).  FERC highly critical of some aspects of <i>Regulation and Frequency Response Service</i> markets, particularly in NYISO and CAISO.	<b>Frequency Keeping:</b> Generating units that can respond particularly quickly to frequency fluctuations are used to smooth out continuous frequency variations associated with moment-to-moment imbalances between demand and generation.
	<b>Continuous services - Regulation Lower:</b> Equivalent to existing 5-minute Raise co-optimised service.			



	<b>Contingency Services - Fast Response - 6 Second Raise</b>	<b>Frequency Response - Primary Response (or High Frequency Response):</b> Provided by increase in generation output or demand sustained for at least 30 seconds.		<b>6 Second Instantaneous Reserves.</b>
	<b>Contingency Services - Fast Response - 6 Second Lower</b>			
	<b>Contingency Services - Slow response - 60 Second Raise</b>	<b>Frequency Response - Secondary Response:</b> Provided by increase in generation output or decrease in demand after 30 seconds.		<b>60 Second Instantaneous Reserves.</b>
	<b>Contingency Services - Slow Response - 60 Second Lower</b>			
	<b>Contingency Services - Delayed Response - 5 Minute Raise</b>	<b>Regulating Reserve:</b> Required to deliver in timescales of 5 to 10 minutes.		
	<b>Contingency Services - Delayed Response - 5 Minute Lower</b>			
<b>Reserve</b>	Not defined as ancillary service. Provided through bids in NEM energy spot market.		<b>Operating Reserve - Spinning Reserve Service:</b> Capacity (or load) that can be made available to the System Operator in less than 10 minutes.	Not defined as ancillary service. Provided through bids in NZEM energy spot market.
			<b>Operating Reserve - Supplemental Reserve Service:</b> Generating capacity (or load) that is available within a short period (usually ten minutes).	
			<b>Energy Imbalance Service:</b> <sup>30</sup> Makes up for any net mismatch over an hour between the scheduled delivery of energy and the actual load that the energy serves in the control area.	
			<b>Standing Reserve:</b> Available in less than 20 minutes. Costs appear as part of Transport Uplift.	
			<b>Contingency Reserve:</b> Scheduled at timescales, 5 to 24 hours ahead, taking into consideration locational concerns. Costs of cancelled starts and hot standby appear as part of Transport Uplift.	

<sup>30</sup> *Energy Imbalance Service* is differentiated from *Regulation and Frequency Response Service* that corrects for instantaneous variations between the customer's resources and load, even if over an hour these variations even out and require no net energy to be supplied.

<p><b>Network Control Ancillary service (NCAS)</b></p>	<p><b>Reactive Power:</b> Explicitly excludes supplying reactive power and controlling voltage using facilities determined by Jurisdictional transmission operators (i.e. VENCORP).</p>	<p><b>Reactive Power:</b> procured through competitive tender from 1998.</p>	<p><b>Reactive Supply and Voltage Control from Generation Sources Service:</b> Supply of reactive power and voltage control directly by generating facilities. Explicitly excludes supplying reactive power and controlling voltage using facilities, usually capacitors, installed as part of the transmission system (paid via TUoS as in the NEM).</p>	<p><b>Voltage Support:</b> Equipment that is able to make or consume reactive power. Includes NEM components equivalent to:</p> <ul style="list-style-type: none"> <li>▪ TNSP provided Network Control (paid via TUoS in the NEM),</li> <li>▪ mandatory Code requirements imposed on generators, and</li> <li>▪ NEMMCO dispatched NCAS.</li> </ul>
<p><b>System Restart Ancillary Service (SRAS)</b></p>	<p>The UK Constraints service is not defined as ancillary service. Not addressed in proposal to ACCC. A cause of concern for EUAA because of effects on energy market and distortion in incentives for ancillary services provision.</p> <p><b>System Restart:</b> Existing system restart agreements would remain with the costs of system restart service allocated equally between the demand and supply sectors of the energy market.</p>	<p><b>Constraints:</b> Generation (or demand) rescheduled to reduce power flows in constrained part of transmission system.</p> <p><b>Black Start:</b> Start-up from shutdown without an external electrical power supply. Last used during 1987 hurricane. Costs appear in Transport Uplift.</p>	<p>Not defined as ancillary services. Provision includes payment for Transmission Uplift, rights for Firm Access and obligations imposed on transmission operators through contract (similar to Licences in Australia).</p> <p>Explicitly excluded as ancillary service by FERC. Each control area operator is responsible for implementing a restoration plan in coordination with non-control area utilities as well other power producers. Most ISOs (at least NYIOS and CAISO) offer Blackstart as an ancillary service, despite FERC's initial ruling on the issue.</p>	<p>Not defined as ancillary service. See comment above.</p> <p><b>Black Start:</b> Generation that can be restarted without any external electricity supply can provide Black Start services. Should partial or full power system collapse ("black-outs") occur, this service can be used to re-energise key parts of the grid to progressively restore supply.</p>

\* This table was prepared by the EUAA and included in the EUAA's submission to the Commission dated January 2001.

Sources:

UK: *Appendix 6, The new electricity trading arrangements Volume 2*, OFGEM, July 1999

(URL: <http://www.ofgas.gov.uk/docs/reta2.pdf>)

US: • *FERC Order No 888, FINAL RULE*, Federal Energy Regulatory Commission, 24 April 1996. (URL: <http://www.ferc.fed.us/news1/rules/pages/order888.htm>)

• *Report To The Federal Energy Regulatory Commission - Ancillary Services Markets*, Market Monitoring Unit, PJM, 1 April 2000.

• *1999 Year End Summary of Market Performance*, Department of Market Analysis, CAISO, January 2000.

• *Annual Market Report May 1999-April 2000*, ISO-NE, June 2000.

• *PJM Interconnection State of the Market Report 1999*, PJM Market Monitoring Unit, June 2000.

• NYISO Website contains general information about the market and posts Monthly Reports that contain insufficient summary data to compare costs with other US markets. There is much greater focus on problems with market design and ongoing dialogue with FERC on such issues.

NZ: *Draft Final Report - MACQS Chapter Three -Ancillary Service Arrangements*, December 2000, New Zealand Grid Security Committee Ancillary Services Working Group. (Not posted on GSC Website (URL: <http://www.gsp.co.nz/welcome.html>) at 31 December 2000.)