



Role of the System Operator in Electricity and Gas Markets.

Supporting paper to 1st Interim Report - Review Of Energy Markets in light of Climate Change Policies

AEMC Staff Paper

23 December 2008

Inquiries

The Australian Energy Market Commission

PO Box A2449

Sydney South NSW 1235

E: aemc@aemc.gov.au

T: (02) 8296 7800

F: (02) 8296 7899

Citation

AEMC 2008, *Role of the System Operator in Electricity and Gas Markets*, December 2008, Sydney

About the AEMC

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

This report has been prepared by AEMC staff to support the analysis of issues for the Review of Energy Markets in light of Climate Change Policies. The contents of this paper does not necessarily represent the views of the Commission.

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Purpose

This supplementary paper to the 1st Interim Report considers the current role of the System Operator in the Australian energy markets and examines the tools available to the System Operator to maintain a safe, secure and reliable energy network. It also details the various mechanisms and costs associated with this process.

1. What is a System Operator?

A System Operator is a central body that manages an energy network, gas or electricity, to ensure there is a safe, secure and reliable supply of energy to participants and customers. Other parties, such as market participants, may also assist the system operator in achieving this aim through being paid for a degree of operational flexibility, although provision of such ancillary services would not typically represent a significant proportion of its normal activities.

Who is a System Operator?

By their design, and the nature of the energy, the gas and electricity energy markets in Australia operate very differently – and within these energy markets, there are further differences between the jurisdictions.

One of the main differences between the gas and electricity markets is that gas can be economically stored, whereas electricity cannot. Electricity needs to be generated at the time it is required and transported for immediate use; whereas with gas, there are options to build underground storage facilities and there is some storage capacity in gas pipelines (known as linepack). The different characteristics of the electricity and gas commodities strongly influences the design of the respective markets and behaviour within these markets.

In electricity, the different markets are:

- the National Electricity Market (NEM), an interconnected electricity network between Queensland, New South Wales, the Australian Capital Territory, Victoria, South Australia and Tasmania. The system operator for the NEM is the National Electricity Market Management Company (NEMMCO);
- the Western Australian Wholesale Electricity Market (WEM) in the South West Interconnected System (SWIS); the North West Interconnected System (NWIS); and twenty-nine small, non-interconnected distribution systems that operate around towns in rural and remote areas beyond these two networks in Western Australia. The system operator for the SWIS is System Management, a ring-fenced business unit within Western Power. Four parties, Horizon Power, Pilbara Iron, Alinta and BHP Billiton, own and operate parts of the NWIS. Horizon Power oversees the operation of the NWIS, as well as owning and operating the small isolated power systems; and
- three relatively small, regulated electricity systems in the Northern Territory: Darwin to Katherine; Alice Springs; and Tennant Creek. Given the size of these small systems, there is no wholesale market in the Northern Territory and it uses a “bilateral contracting system” in which generators are responsible for dispatching electricity into the system to meet their customers’ demand.

In gas, there are separate markets in Queensland, New South Wales & the Australian Capital Territory, Victoria and South Australia, although the eastern states are interconnected by pipelines. There are also separate markets in Western Australia and the Northern Territory. VENCorp is the system operator in the Victorian gas market, which operates under a “market carriage” model. In the other markets, system operation effectively occurs without a central body, through the bilateral arrangements between market participants.

2. Maintaining supply and system security

This section describes those markets where the system operator plays an active role in maintaining safe, secure and reliable supply, namely the NEM, the SWIS in Western Australia and the Victorian gas market.

National Electricity Market

NEMMCO uses a number of mechanisms to maintain the security and reliability of supply of electricity in the NEM. These mechanisms fall into three broad areas: parameters to establish the market, market mechanisms and intervention mechanisms. Parameters to establish the market take the form of technical and system performance standards that ensure a given level of safety, security and reliability associated with each individual connection.

The main market mechanisms are operation of the spot market dispatch engine, which ensures security-constrained cooptimised dispatch of energy and eight frequency control ancillary services (FCAS) markets. Other ancillary services, such as network control and system restart, are managed through bilateral contracts.

Intervention mechanisms are direct interventions in real time when the market fails to deliver what is required to ensure the safe, secure and reliable supply of electricity, including the Reliability and Emergency Reserve Trader (RERT) mechanism, NEMMCO's directions powers and NEMMCO's clause 4.8.9 instructions powers.

Parameters to establish the market

The system access standards hierarchy is as follows:

- system standards¹ – establish the security, reliability and quality parameters of the power system;
- access standards² – define the levels to which plant must be able to perform in order to connect to the power system; and
- plant standards³ – which are technology specific and which, if met, would assure compliance with the access standards.

In connecting loads/generating units to the network, the network service provider consults with NEMMCO, in an advisory capacity, on any standards that will impact on the security of the system.

1. *National Electricity Rules*, schedule 5.1a.

2. NER, schedules 5.1 to 5.3a.

3. In the absence of any plant standards approved by the Reliability Panel, the schedules in chapter 5 of the NER applies.

In order to ensure the secure and reliable operation of the power system, there are standards that define parameters for the design, construction and operation of the power system. Technical standards establish thresholds for access to the network and are defined in the National Electricity Rules (NER):⁴

- minimum access standards define the minimum level of operational performance required for equipment to be considered for connection to the NEM; and
- automatic access standards (more stringent than the minimum access standards) define the desired level of operational performance that ensures safe and secure connection of equipment to the NEM.

Participants can also negotiate access to the network when the capability of their equipment does not meet the automatic access standards. Loads/generating units need to at least meet the minimum standards for connection.

The standards determined for access to the network by each load/generating unit are registered as the performance standards for that unit. The load/generating unit must continue to meet and maintain registered performance standards as part of its connection to the NEM. Compliance with registered performance standards is regulated by the Australian Energy Regulator (AER).

Market mechanisms

Wholesale trading in the NEM is conducted as a spot market where supply and demand are instantaneously matched in real-time through a centrally-coordinated dispatch process. NEMMCO's NEM dispatch engine (NEMDE) determines which generators are required to produce electricity to meet demand, in the most cost-efficient way, while ensuring that the power system is maintained in a secure operating state.⁵ NEMDE then dispatches these generators into production, taking into account any constraints within the system. NEMDE runs every five minutes.

To ensure that the power system is operated according to technical standards, NEMMCO engages a range of ancillary or supplementary services. These services control frequency deviations from the standard, the voltage and power flow at different points of the network, and restart of the entire power system in the event of a complete or partial shutdown.

Only the services to control frequency deviations are procured through a central market. The other ancillary services are purchased through bilateral contracts.

4. NER, chapter 5.

5. Clause 4.2.4 of the NER defines a secure operating state as, in NEMMCO's opinion, the power system is operating in a satisfactory operating state (i.e. the power system is operating within its defined parameters) and will return to a satisfactory operating state following the occurrence of an event which NEMMCO considers to be reasonably possible ("credible contingency").

Frequency control ancillary services

FCAS are procured through eight separate real-time markets, where service providers bid in their availability to provide specific services, with dispatch of FCAS cooptimised with dispatch of energy for each five-minute dispatch interval.

Variations of frequency away from the standard can cause equipment connected to or supplied from the power system to malfunction or disconnect from the network. Wider variations in frequency can lead to equipment damage. Malfunction of generating units can lead to further frequency deviations and, in extreme circumstances, cascading malfunctions on the network. Depending on the extent of cascading failures, total collapse of the power system is possible, with consequently significant economic and social impacts to industry and customers.

Frequency, therefore, needs to be continuously managed. FCAS includes a number of processes that dynamically fine tune supply to ensure that the power system is stable and frequency operating standards are maintained.

Frequency control can be divided into two reasonably distinct subsets:

- regulation – correction of the moment-to-moment generation/demand imbalances created by minor deviations in load or generation. Regulation services are continually used to correct for minor changes in the demand/supply balance, and are centrally controlled by NEMMCO; and
- contingency – correction of the generation/demand balance following a major contingent event⁶ such as the loss of a generating unit or a large transmission element. Contingency services are automatically (self dispatched by service providers) to cover contingent events but, historically, have only been used occasionally.

The eight FCAS markets are:

- regulation raise;
- regulation lower;
- contingency fast raise (6 second raise);
- contingency fast lower (6 second lower);
- contingency slow raise (60 second raise);
- contingency slow lower (60 second lower);
- contingency delayed raise (5 minute raise); and
- contingency delayed lower (5 minute lower).

6. As defined in clause 4.2.3(a) of the NER, a “contingent event” means an event affecting the power system which NEMMCO expects would be likely to involve the failure or removal from operational service of one or more generating units and/or transmission elements.

During each and every five-minute dispatch interval of the market, NEMDE must enable a sufficient amount of each of the eight FCAS products, from the FCAS offers/bids submitted, to meet the system requirements.

Network support and control services

Network Support and Control Services (NSCS) in the NEM are currently procured and used by both Transmission Network Service Providers (TNSPs) and NEMMCO. Network Control Ancillary Services (NCAS), a subset of NSCS, are services procured by NEMMCO critical to the maintenance of secure and reliable operation of the power system, by providing the capability to:

- maintain the transmission network within its current, voltage and stability limits following a credible contingency event; and
- enhance the net value of spot market trading by increasing transmission network power transfer capability within those limits.

NEMMCO is currently undertaking a review of the NSCS in the NEM – the objectives of the review being:

- to identify and address issues surrounding the current arrangements for the procurement and delivery of NSCS by TNSPs and NEMMCO; and
- to identify, evaluate and make recommendations on potential alternative arrangements for the more efficient procurement and delivery of NSCS.⁷

NEMMCO expects to complete its NSCS review in March 2009, and submit a Rule change proposal to the AEMC to implement the outcomes of its review in April 2009.

Interventions in the market

Reliability and Emergency Reserve Trader

The RERT mechanism is designed to be invoked by NEMMCO where the market has failed to deliver reserves sufficient to meet regional minimum reserve limits. It is a mechanism designed to deal with small levels of reserve shortfall that are not enduring.. The Reliability Panel⁸ believes that in the longer term, the market should be able to operate without the need for a potentially distortionary intervention mechanism such as the RERT.⁹ For this reason, in developing the RERT mechanism, relevant National Electricity Rules were designed with a sunset period.

7 NEMMCO, Network Support and Control Services Review, NEMMCO website.

8 The Reliability Panel is a specialist body within the AEMC and comprises industry and consumer representatives. It is responsible for monitoring, reviewing and reporting on the safety, security and reliability of the national electricity system and advising the AEMC in respect of such matters.

9 AEMC Reliability Panel Rule change proposal, NEM Reliability Settings: Information, Safety Net and Directions, February 2008, p.11.

Subject to meeting relevant guidelines, the RERT mechanism¹⁰ allows NEMMCO to purchase additional reserves (generation or demand-side) needed to meet regional minimum reserve levels. The reserve contracts are only awarded with respect to a discrete period of forecast low reserves in a region. To date, this has not exceeded one year.

Features of the RERT¹¹ include:

- NEMMCO is able to contract for reserves up to nine months in advance of a projected shortfall¹² – extending this timeframe (from the previous six months) is expected to increase the range of entities willing to offer reserve contracts, increase competition and therefore reduce the procurement cost; but is not so far in advance of a projected shortfall to distort investment in new generating plant;
- NEMMCO can undertake multiple rounds of tendering and contracting, when selecting the optimal portfolio of reserve contracts to cover a projected shortfall¹³ – previously, NEMMCO only undertook one round of tendering – a rolling tendering process allows NEMMCO’s reserve contracting to be informed by the updated quarterly projections of the impact of generation input constraints and the associated market response; and also gives flexibility to NEMMCO to negotiate with a previous tenderer if a projected shortfall arises at short notice;
- RERT operates on a regional basis¹⁴ – NEMMCO only contracts for reserves in the region(s) projected to be in a reserve shortfall; NEMMCO continues to be required to consult with the jurisdictions from the affected regions before entering into reserve contracts;
- NEMMCO recovers the costs of the operation of the RERT from Market Customers in the affected regions on a basis that is agreed with the associated jurisdictions¹⁵; and
- RERT has a sunset period of four years¹⁶ – the Reliability Panel will review the operation of the RERT within three years of its operation.

The Reliability Panel has issued guidelines for the operation of the RERT¹⁷. The guidelines include: the information NEMMCO must take into account when deciding whether to exercise the RERT; the relevance of the RERT principles to the exercise of the RERT; and the process NEMMCO should undertake in contracting for reserves.

10 Commenced on 1 July 2008 through the *National Electricity Amendment (NEM Reliability Settings: Information, Safety Net and Directions) Rule 2008 No. 6*. Previously, NEMMCO had reserve trader powers since market start, which were amended and replaced with the RERT mechanism.

11 NER, clause 3.20.

12 NER, clause 3.20.3(d).

13 NER, clause 3.20.3(e).

14 NER, clause 3.20.3(b).

15 NER, clause 3.15.9.

16 NER, clause 3.20.1.

17 NER, clause 3.20.8.

The NER require NEMMCO to report, at least annually, on its exercising of the RERT mechanism.¹⁸ This report includes: each time NEMMCO intervened to secure available reserves; each time contracted reserves were activated; and NEMMCO's costs in relation to its RERT activities.

Where NEMMCO actually dispatches scheduled reserves or activates unscheduled reserves, the NER require NEMMCO to report on its use of the RERT as soon as practicable¹⁹. This report includes: the circumstances for the activation or dispatch of reserves; how NEMMCO determined the latest time for the dispatch or activation of reserves; the changes in market dispatch outcomes as a result of the use of the reserves; and the process implemented by NEMMCO to dispatch or activate the reserves.

NEMMCO is still to develop its procedures for exercising the RERT, taking into account the RERT principles²⁰ and the Panel's guidelines. NEMMCO must publish its first procedures by 30 June 2009.²¹

NEMMCO's Directions powers

As a last resort mechanism to maintain supply and security reliability, NEMMCO has the power to issue directions to a Registered Participant with scheduled plant or a market generating unit, if NEMMCO considers it necessary to maintain or re-establish the power system to a secure, satisfactory or reliable operating state²².

The Registered Participant must comply with NEMMCO's directions, unless to do so would be hazardous to public safety, materially risk damaging equipment or contravene any other law.²³ If a Registered Participant does not comply with NEMMCO's direction, it must provide a report to NEMMCO and the AER within two business days, detailing the reasons for not complying.²⁴

Directions fall into three categories – energy, market ancillary services or other services. Compensation is paid for directions – to directed participants as well as affected participants (as determined by NEMMCO).

The NER require NEMMCO to report, as soon as reasonably practicable after issuing a direction, on the details of the direction including the circumstances that gave rise to it, changes in dispatch due to the direction, and the processes implemented by NEMMCO to issue the direction.²⁵

18 NER, clause 3.20.6(c).

19 NER, clause 3.20.6(a).

20 NER, clause 3.20.2(b).

21 NER, clause 3.20.7(g).

22 NER, clause 4.8.9.

23 NER, clause 4.8.9(c).

24 NER, clause 4.8.9(e).

25 NER, clause 3.13.6A(a).

NEMMCO's annual Statement of Opportunities (SOO) for 2008 indicates the number of directions issued since 2003.²⁶ For the period 2003-08, the total number of directions, by region, were:

Region	2003/04	2004/05	2005/06	2006/07	2007/08
Queensland	9	8	1	3	5
New South Wales	0	0	52	0	0
Victoria	0	0	0	6	0
South Australia	2	34	0	1	1
Tasmania	0	0	8	0	1

NEMMCO's Clause 4.8.9 Instructions powers

Clause 4.8.9 instructions are very similar to NEMMCO's directions powers, but apply to registered participants with non-market, non-scheduled generating units or loads. This power is also used to maintain or re-establish the power system to a secure, satisfactory or reliable operating state.

There is no compensation paid to instructed participants.

NEMMCO makes publicly available its operating procedures for interventions, directions and clause 4.8.9 instructions²⁷.

South West Interconnected System in Western Australia

Frontier Economics' report, *Review of implications for energy markets from climate change policies – Western Australia and Northern Territory elements*, gives a more detailed description of the role of the System Operator in the SWIS.²⁸

Victorian Gas Market

Market Participants generally try to align their supply and consumption quantities so as to minimise their exposure to the wholesale market. However, most of the time, there is an imbalance between the gas supplied by a participant and the gas consumed by that participant and its customers. The wholesale gas market determines a market price used by all participants to trade their imbalances.

²⁶ NEMMCO, Statement of Opportunities, October 2008, section 13.4.

²⁷ NEMMCO, NEMMCO operating procedure: intervention, direction and clause 4.8.9 instructions, SO_OP3707.

²⁸ Frontier Economics, *Review of implications for energy markets from climate change policies – Western Australia and Northern Territory elements*, November 2008, Appendix A, section 2.1.4.

As system operator, VENCORP has broad ranging powers of intervention, to be used in the event of an emergency, a threat to system security, a system force majeure event²⁹ or suspension of the market.³⁰ The powers are designed to be broad to allow for any event that may require intervention, and gives VENCORP absolute discretion to take any action or procedure necessary to protect the public or property.

VENCORP's powers include:

- issuing emergency directions to participants;³¹
- requiring gas injections to be made into the transmission system, including non-firm or off-specification gas;³²
- requiring withdrawals of gas to be taken from the transmission system;
- emergency curtailment or interruption of supply to customers i.e. load shedding, in accordance with the emergency curtailment list;³³ and
- injecting gas from VENCORP's liquefied natural gas (LNG) reserves.

The Victorian gas industry has adopted five levels of emergency response. The incremental response to incidents depends on the seriousness of the incident and the level of resources and expertise required to address the incident. Levels one to four do not require VENCORP intervention. A level five emergency is an event which has escalated to a system-wide threat that VENCORP reasonably believes is a situation which requires them to declare an emergency, and assume overall responsibility for managing the incident.

29 *Victorian Gas Industry Market and System Operations Rules* (MSO Rules), clause 6.7.2(a) defines a system force majeure event.

30 MSO Rules, v29, operational 1 January 2008, chapter 6.

31 MSO Rules, clause 6.5.

32 Non-firm gas is gas that may be made available for injection into the transmission system, but which availability is susceptible to possible reduction at short notice, such that the participant would not be prepared to guarantee its supply other than on this basis; off-specification gas is gas that is injected into the transmission system at a system injection point that does not comply with the gas quality specifications for that system injection point.

33 MSO Rules, clause 6.4: an emergency curtailment list provides for the curtailment or interruption of the supply of gas, and may also provide for the order, amount, duration and timing of that curtailment or interruption.

Under a level five emergency, VENCORP's powers, more specifically, include:

1. gas supply shutdown;
2. gas supply re-connection;
3. setting gas supply shutdown exemption criteria and priority reconnection criteria, and managing those processes;
4. dealing with gas supply management;
5. dealing with gas demand management;
6. dealing with off-specification gas;
7. establishing and operating call centres; and/or
8. modifications to the Principal Transmission System.³⁴

In any event that VENCORP must intervene, operational obligations to the system take precedence over market considerations.

³⁴ The Principal Transmission System transports natural gas to the vast majority of Victorian households and businesses; from Longford in the east, to and from Culcairn in the north (connecting to the New South Wales transmission system) and Iona in the west (connecting to South Australia, Otway gas production and underground gas storage facilities).

3. What are the costs of maintaining supply and system security?

National Electricity Market

Parameters to establish the market

Technical standards are set out in the NER and any new participants wishing to join the NEM, or existing participants intending to connect another generating unit or load in the NEM, must be aware of these requirements before taking such action.

The cost of connecting and complying with these standards should be included in a participant's assessment of the total costs of participating in the NEM, and assessed against the benefits of joining the NEM. The costs of meeting and continuing to comply with these standards are borne by the participant, as part of doing business in the NEM, and will vary between participants. As such, there are no fixed figures on the cost of complying with the technical standards in the NEM.

Market mechanisms

NEMMCO's systems calculate a dispatch price for each market ancillary service at each regional reference node of every dispatch interval, and uses the same process as for the energy market. These systems cooptimise the energy and ancillary services markets, to minimise the total cost of energy plus FCAS to the market.

The price for each FCAS category is established with reference to the cost of delivering an incremental unit of the service – the calculation of the price can be very complex given the cooptimisation of the energy and eight FCAS markets. All providers of each particular service for that particular dispatch interval are paid the half-hourly average price, i.e. the ancillary service spot price, for a trading interval. Unlike energy prices, FCAS prices must be greater than or equal to \$0, thus the cost of any ancillary service will always be between \$0 and \$10 000 per megawatt hour.

Ancillary service costs are dependent upon the amount of service required at any particular time, and as these amounts can vary significantly from period to period, the total FCAS costs will also vary.

Interventions in the market

Reliability and Emergency Reserve Trader

Under the previous reserve trader arrangements³⁵, NEMMCO contracted with reserve providers on the basis of a structure that incorporates three different forms of payment:

1. availability payments – by being available to provide reserve;
2. enabling payments – by responding to a pre-activation instruction from NEMMCO to prepare to provide reserve; and
3. usage payments – when the reserve is actually called on.

As part of the reserve trader tendering process, potential reserve providers submitted a tender for each of these services. In accordance with NEMMCO's previous invitation to tender for reserves documentation, the three services were described as:

- the availability charge applied where significant facilities and other overheads are incurred in making the reserve available, and is priced at fixed cost dollars per billing period;
- the enabling charge applied where significant additional operating costs are incurred in making the reserve available at short notice, and is priced at dollars per NEMMCO pre-activation instruction or dollars per MW per NEMMCO pre-activation instruction; and
- the usage charge applied to energy provided by the reserve and where significant operating costs may be incurred by the potential reserve provider when the reserve is actually delivered, and is priced at dollars per MWh.

The NER determines that the costs for contracting for reserves is shared between the affected jurisdictions, in accordance with their relative energy demands.³⁶ Market customers in these jurisdictions are allocated a share of the regional costs, based on their relative energy consumption during business hours.

To date, NEMMCO has only contracted for reserves twice and on both occasions, availability payments were made but no enabling or usage payments were paid. In 2004/05, NEMMCO contracted for 84 MW costing \$1.035m between the Victorian and South Australian regions. In 2005/06, NEMMCO contracted for 375 MW costing \$4.352m between the Victorian and South Australian regions.³⁷

35 The RERT mechanism, which enhanced the previous reserve trader arrangements, commenced on 1 July 2008.

36 NER, clause 3.15.9.

37 NEMMCO's financial year reports on procuring reserves to ensure reliability of supply, in accordance with clause 3.13.6(b) of the NER (prior to 1 July 2008).

NEMMCO has also advised the market that even though its medium term projected assessment of system adequacy (MT PASA) forecasts a shortage of 168 MW of reserves for the Victorian region for late Jan/early Feb 2009, i.e. summer 2008-09, further studies established that the RERT did not need to be invoked for summer 2008-09 as the probability of unserved energy remained less than 0.002 per cent, despite the apparent shortfall of capacity.³⁸

NEMMCO's Directions powers

There are a number of clauses in the NER which determine how compensation to directed participants is calculated, and the calculation of any compensation to affected participants, depending on the nature of the direction.

For participants directed in relation to energy or market ancillary services, NEMMCO determines the price for the compensation to be paid as:

- the price below which “90% of the spot prices or market ancillary service prices for the relevant service provided in the region to which the direction relates, for the 12 months immediately preceding the trading day in which the direction was issued”;³⁹ or
- the participant’s “valid dispatch bid, dispatch offer or rebid for dispatch of the service”⁴⁰ at the time of the direction.

If available, NEMMCO would determine the latter price as compensation, as this is the price at which the participant was willing to offer that service to the market.

For directed participants in relation to market ancillary services and other services, NEMMCO determines the price for the compensation to be the fair payment price for that service as determined by an independent expert either within the last twelve months or by appointment for that specific service.⁴¹ Directed participants, who are entitled to compensation, are able to make a written submission for additional claims for compensation if the total amount is greater than \$5000.⁴²

Interest is also paid to directed participants on the amount of their compensation.⁴³

38 NEMMCO, *Reserve Outlook for Summer 2008 2009*, 29 August 2008.

39 NER, clause 3.15.7(c).

40 NER, clause 3.15.7(d).

41 NER, clause 3.15.7A.

42 NER, clause 3.15.7B.

43 NER, clause 3.12.1(n).

For affected participants⁴⁴, NEMMCO determines the compensation participants would be entitled to receive, or must pay, had the intervention not occurred.⁴⁵ The value of the compensation must be at least \$5000 for any payments to be made.⁴⁶ In determining the value of the compensation, NEMMCO is required to consider the direct costs incurred/avoided by the participant, e.g. fuel costs, incremental maintenance and staffing costs, any amounts the participant is entitled to receive as part of the spot market or ancillary services transactions, and the regional reference price published during the trading interval that the intervention occurred.⁴⁷ Affected participants are able to make additional claims for compensation if they believe the compensation determined by NEMMCO is less than the amount they are entitled to receive – and must make a written submission for this amount.⁴⁸

For energy directions, the NER determines that compensation is paid by the Market Customers in the region(s) that benefited from the direction, known as the regional benefits factor⁴⁹, in their next billing statements following determination of the value of the compensation.⁵⁰ For market ancillary services or other directions, such as network support services, compensation is paid by Registered Participants as part of their participant fees.⁵¹

NEMMCO's 2008 SOO indicates the value of compensation that has been paid in relation to directions issued since 2003.⁵² For the period 2003-08, by region, the total compensation paid has been:

Queensland	\$6 533 078
New South Wales	\$3 061 118
Victoria	\$1 371 163
South Australia	\$3 624 028
Tasmania	\$557 (which joined the NEM in 2005)

It should also be noted that, due to the way the allocation of costs is distributed depending on the nature of the direction, these totals are the cost of the directions that were incurred in each region but are not necessarily an indication of the jurisdictions that received the benefits of the directions and paid the costs.

44 An affected participant is either a person who was not directed but was still affected by the direction; or a person who was directed but has other generating units or services which were not directed but were also affected by the direction.

45 NER, clause 3.12.2.

46 NER, clause 3.12.1(i).

47 NER, clause 3.12.2(j).

48 NER, clause 3.12.1(g).

49 NER, clause 3.15.8.

50 NER, clause 3.15.8.

51 NER, clause 3.15.8(g).

52 NEMMCO, Statement of Opportunities, October 2008, section 13.4.

There has also been a downward trend in the annual totals of compensation for directions:

2003-04	\$5 266 103
2004-05	\$4 143 902
2005-06	\$3 251 125
2006-07	\$1 859 674
2007-08	\$69 697

The NER also requires NEMMCO to publish the details of any compensation recovery amount⁵³ arising from the direction, by Registered Participant in each region, and the regional benefit as a result of the direction.⁵⁴

NEMMCO's Clause 4.8.9 Instructions powers

There is no compensation paid to instructed participants. We have been advised that the reasoning for this is that the party being instructed is not subject/reliant on NEMMCO's dispatch process for income, and receives an independent income from retailers or via power purchase agreements.

To date, there has been minimal use of this power by NEMMCO. However, if clause 4.8.9 instructions are used more often, the lack of compensation may become a significant issue for instructed participants.

South West Interconnected System in Western Australia

Frontier Economics' report, *Review of implications for energy markets from climate change policies – Western Australia and Northern Territory elements*, also details how costs incurred by the system operator are allocated in the SWIS.⁵⁵

Victorian Gas Market

When VENCorp intervenes in the Victorian gas market, it is required to prepare a report on the circumstances for that intervention and assess the adequacy of the Market and System Operation Rules provisions, the appropriateness of VENCorp's actions, and the costs incurred by VENCorp and/or participants in responding to the event. This report is provided to the AER.⁵⁶

53 NER, clause 3.15.8(a).

54 NER, clause 3.13.6A(b).

55 Frontier Economics report, *Review of implications for energy markets from climate change policies – Western Australia and Northern Territory elements*, November 2008, Appendix A, section 2.1.4.

56 MSO Rules, clause 6.7.7.

Following an intervention event, participants are entitled to claim for compensation or receive payment for their actions.⁵⁷ There have been a number of times that these intervention powers have been used by VENCorp, predominantly for ancillary payments for gas (including the injection of LNG). Its reports on these events, by year, indicate that the estimated costs⁵⁸ of these interventions have been:

1999	No costs identified
2000	\$569 000
2002	\$164 000
2004	\$300 000
2008 ⁵⁹	\$280 000

57 MSO Rules, clauses 6.6.5, 6.6.6 and 6.6.7.

58 These are only estimated costs as clause 6.7.7 of the MSO Rules require VENCorp to report on any intervention event within ten business days of the event occurring, which does not allow sufficient time for detailed settlement information to be provided. The estimated costs are updated at final settlement.

59 The Victorian gas market was launched in 1999 and modified significantly in February 2007. Consequently, there may be some variation in the calculation of payments made in these reports after 1 February 2007.