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October 26, 1999

Mr Michael Rawstron
General Manager Regulatory Affairs
Australian Competition & Consumer Commission
PO Box 1199 Dickson ACT 2602
470 Northbourne Ave Dickson ACT 2602
Australia

D99/13268



Dear Michael ,

Bardak Submission on Capacity Mechanisms/Change of VoLL

Please find enclosed a printed copy of the submission sent electronically today - in case there is any problem in reading the diagrams.

Yours sincerely,

A handwritten signature in black ink that reads "Rob Booth". The signature is written in a cursive, flowing style.

Dr Robert R Booth
Managing Director



Bardak Group

Submission to the ACCC on NECA Code Change Proposals regarding Capacity Mechanisms and Value of Lost Load

1. Background

Bardak has reviewed the proposals arising from the NECA reviews of Capacity Mechanisms and the Review of VOLL and the proposed Code changes submitted by NECA to implement the recommendations.

We do not propose to comment specifically on the proposals for a negative spot price, as the nature of the comments made on the other two matters will make any comment in the third topic irrelevant.

Bardak appreciates the opportunity to make comment to the ACCC on the proposed Code changes and on the general issues involved.

2. Nature of Changes to the NEM Trading System

Bardak is concerned at what appears to be an inadequate understanding evident in the NECA review reports of the latest developments in overseas practices in trading systems and a virtual disregard of market power issues emerging in Australia.

Bardak respectfully suggests that the ACCC (and NECA) needs to step back from the detail and from proposing/authorising further changes and instead examine the wider problems evident in preventing an efficient national electricity market developing in Australia.

We are of the view that the proposed Code changes will not comply with this objective, and therefore oppose their implementation/authorisation.

Bardak has for many years been critical of the decision taken in Australia in the early 1990's to follow the UK style of compulsory, single priced pool, with compulsory centralised dispatch, where the pool price is set only by generators bidding for dispatch. The very nature of the Australian power systems; the small number of large generating stations; the impossibility of creating sufficient competition in generation in most States; and the regional nature of the Australian systems, made such a trading arrangement very inappropriate at the time, and continues to be so.

There is little point in the ACCC authorising a trading system which can only work, even in theory, if vigorous competition exists in the generation sector of the industry, when the practical reality is that sufficient competition can never be introduced in most regions of the National Market in Australia. In addition, continuing Government ownership of virtually all of the generating assets in most of the States, together with the public aversion to further privatisation now becoming evident, makes it certain that Australia will have to live with this situation for a long period of time.

It is time that Australia faced up to this reality.

Unfortunately, the NECA review reports ignore these inherent structural problems and the market power issues which result from them, and continue to assume that Australia can have an efficient competitive market which will be improved by the proposed Code changes. This is not true.

Quite apart from the particularly Australian structural problems, the nature of such a trading system - where the price is set by a few participants and applies to all - has proven to be inherently troublesome.

The theoretical economic arguments relating the “efficiency advantages of the gross pool trading system” and its supposed ability to “efficiently price the external third party effects of transport losses and the costs of network constraints” - arguments which influenced the Commissions’ acceptance of the trading system design in 1997 - have been shown to be far outweighed by the ability of the supply side to “game” the rules and to increase the common pool price to levels well above those which would apply in an efficient competitive market.

In addition, there is a growing realisation that the single pool price itself contains a multitude of inherent cross-subsidies and is not a suitable “market price” for electricity. For example, in the context of answering accusations associated with the NSW Vesting Contracts providing an opportunity for retailers to cross subsidise contestable customers, the NSW Treasury recently made the statement:-

“Significantly the design of the electricity market which is based on all plants receiving a single system marginal price in each 30 minute period and which allows those prices to vary between zero and \$5,000/MWh explicitly creates both inter-temporal and inter-plant (for a single generator) cross-subsidies. Given that the ACCC has authorised the market rules, it would be inconsistent for the ACCC to oppose cross-subsidies in principle, particularly given their role in efficient pricing.”¹

This is an extraordinary statement. It admits that the single priced pool inherently contains cross-subsidies. And since it costs the power supply industry much less to supply industrial loads (especially large, high load factor loads taken at high voltage) compared to domestic/commercial loads, then the cross-subsidy increases the costs to industrial loads and reduces costs to domestic loads.

It should be noted that this inherent cross-subsidy is large - tariffs for aggregated industrial loads are typically only 70% of average tariffs paid by all customers in most electricity markets around the world.

A properly competitive market would match the economics of power production with the characteristics of the load, and supply it at least cost. This is what happens in overseas competitive markets where a single priced pool is not used.

We again draw the attention of the ACCC to the decisions taken in the UK last year to abolish the compulsory, single priced pool and to implement trading systems

¹ Final Submission by NSW Treasury to the ACCC on the NSW Vesting Contract Authorisation process, page 9.

consistent with normal commodity markets and consistent with best modern practice in both electricity and gas.

The Review reports make clear the inherent problems of such a trading system and well worth detailed consideration².

After some seven years of operation of the world's only compulsory, single priced pool, the UK experience is that market power has been easily able to be exercised, resulting in pool prices which have remained "stubbornly high" and are now some 25% above new entrant prices - despite obviously falling input prices for almost all relevant factors of production (capital cost, operating efficiency, coal and gas fuel costs, interest rates and labour costs). Consumers have failed to gain the benefits of the reduced costs of production, due to the ability of producers to manipulate the single pool price to levels well above competitive market outcomes.

We note that the ACCC has recently flagged the fact that the:-

"underlying design of the NEM may need to be revisited at some time in the future, depending on both further international developments and the experiences of participants and new entrants to the NEM, as well as end users in the participating jurisdictions."³

Bardak agrees with this sentiment, but is of the view that lessons able to be learnt from both the international developments and the experience of the NEM are already firm enough to warrant such a revisit. The sooner that it begins, the sooner Australia will be able to achieve the efficient and competitive electricity market which has been sought for many years.

For example, final decisions have been made in the UK, and that country will be moving to a more modern trading system by October of next year, where:-

- most trading will be directly between suppliers and customers at prices and upon terms and conditions which they freely negotiate;
- there will be access to an optional pool (a "power exchange") where parties can trade in contractual imbalances over the long and short term, and
- there will be central "balancing market", operating on incremental and decremental prices offered by participants, plus negotiated contracts, to provide frequency control and system security oversight.

Clearly, Australia should be working to evolve the NEM trading system from its present state into one more in tune with the latest overseas developments and the increased understanding of the practical operation of competitive markets which is now available.

The UK regulators also see benefits in the similarities between the new trading

² See the latest discussion paper by OFGEM dated July 1999, the White Paper dated October 1998 and the original OFFER review dated July 1998. All these are available on www.open.gov.uk.

³ ACCC Draft Determination on the Authorisation of the National Electricity Code, 8th October 1999.

arrangements for electricity and those widely in use in the gas industry.

Their aims would seem to be generally shared by the Commonwealth Government as well⁴. In their submission to the NECA Transmission and Distribution Review, the Commonwealth states that:

“The Resources Policy Statement makes clear the Commonwealth’s commitment to promoting competitive reform of electricity supply industries and ensuring an effective transition to a fully competitive national electricity market by 2001 including to encourage investment which extends and deepens the market. The Commonwealth is seeking to maintain and where possible accelerate the momentum for this reform and to identify and remove impediments to the efficient operation of electricity markets.

NECA should be mindful that electricity reform is only part of the overall competition policy agenda. The Commonwealth is seeking to build upon complementary reforms in electricity and gas industries to deliver more integrated and compatible national frameworks for electricity and gas by 2002. The Commonwealth would want the outcome of this Review to promote the goal of greater convergence between electricity and gas sectors.

In short, the foundations need to be laid for a fully integrated national energy market. The Commonwealth is anxious this be a market driven by energy consumers, where the means of supplying energy and the types of fuel involved are less important than the costs of energy and the quality of associated energy products and services. Increased competition and more transparent and efficient national markets must remain the central drivers of this reform process.”

Unfortunately, the nature of the Code changes being proposed by these latest NECA reviews would take the Australian trading system further way from modern international best practice, and into realms which are even more theoretical than the present rules.

The changes proposed by NECA are based on academic theory better tested in the laboratory of an economics department of a major University - not on something as critically important as Australia’s electricity system.

We believe that the ACCC should therefore not “authorise” or “accept” the Code changes being proposed by NECA, since they would delay the evolution of the NEM trading system towards best modern overseas practice.

Instead a major effort is needed to urgently implement a better and independent market monitoring activity, and depending on the findings of that activity, to implement appropriate market power mitigation measures where required.

⁴ Although the Commonwealth is still rather guarded about a possible move away from a “gross pool”.

3. Concern with the Performance of the NEM Trading System

Quite apart from the overseas moves away from the compulsory, single priced pool system, there is increasing reason for concern regarding the lack of competition, and hence market power problems, in the States forming the NEM. This is manifesting itself in a increasing level of disquiet amongst customers in States other than Victoria and NSW.

For an example of the disquiet, the recent submission made by Ergon Energy to NEMMCO in relation to time varying loss factors states that:-

“The current regions, especially Queensland, exhibit cartel structures in generation.” and,

“We remind NEMMCO of the message delivered by Customers at the recent NEM Performance Appraisal Seminar in Sydney. Both Customer and Consumer advocate groups were united in doubting the benefits of the NEM, the costs of operating the NEM were considered excessive and the value NEMMCO provided to the NEM (over preexisting State based market systems) was challenged.”

The various submissions made by the Business Council of Australia also show the level of disquiet at the results of the NEM, even though many of their members would have been the beneficiaries of the period of low pool and contract prices in 1997/98.

The fact of the matter is that most of the lower electricity prices able to be obtained by contestable customers in Victoria and NSW predated the coming of the NEM and were a reflection of the period of almost twelve months when pool prices in NEM1 (available only to a limited number of contestable customers in Victoria and NSW) averaged only \$13-14/MWh - clearly abnormal and unsustainable in the longer term⁵.

Since then pool prices in those same States have almost doubled⁶ and as the old contracts expire, the same customers are now receiving offers at much higher prices (sometimes as much as 50% higher) than those able to be obtained in 1997/98.

In the other States, pool prices since the coming of NEM (or the start of the Queensland interim market) have risen substantially above the equivalent prices applying ex the generation segment of the industry prior to the introduction of the single-priced pool system.

As at the time of writing of this submission, average pool prices in the various States for the calendar year 1999 were:-

South Australia	\$49.6/MWh
Queensland	\$46.0/MWh

⁵ The very fact that the compulsory single priced trading system could produce this outcome should also be a major cause for concern. Exceptionally low prices can be just as damaging as exceptionally high prices.

⁶ From the \$13/MWh level to \$25/MWh during 1998/99.

NSW	\$23.6/MWh
Vic	\$23.4/MWh

There has been little joy for customers in Queensland and South Australia since the coming of the NEM.

The lower prices obtained by a relatively small and limited set of customers in Victoria and NSW in that one particular year are still being widely quoted as evidence of the benefits of competition policy in general and of electricity market reform in particular.

But the overall average price of electricity in Australia for that same year showed only a rather miserly 2% fall from the average price in the previous year - about the same as the rate of reduction in average price for the five previous years⁷. When the statistics emerge for 1998/99 and 1999/00, it is doubtful that average electricity tariffs will show much of a reduction at all and may increase - leading to further levels of disquiet by end customers.

The South Australian and Queensland pool prices have exhibited a worrying number of price spikes, which are the main reason why average prices are so much higher in those States. The average of the maximum prices each week in the various States for the same period as used above were⁸ :-

South Australia	\$908/MWh
Queensland	\$671/MWh
NSW	\$171/MWh
Vic	\$159/MWh

It is not widely recognised that small periods of time at prices of around \$1,000/MWh (let alone at the VoLL level of \$5,000/MWh) can have a very large effect on the average pool price in a given period.

For example, each hour at a price of \$5,000/MWh adds \$0.6/MWh to the annual average pool price. At \$20,000/MWh (as proposed by NECA), each hour would add \$2.30/MWh to the annual average price.

A move of VoLL to \$20,000/MWh, without taking steps to eliminate all unnecessary price spikes due to market power problems would be most unwise indeed and inevitably lead to higher pool prices for end customers.

These results should not be surprising. It is only Victoria which has taken steps to implement an effective level of competition⁹ in generation. And the strong

⁷ See ESAA "Electricity in Australia" 1999 edition. The price fall is incorrectly quoted in the text as being 1%, rather than 2% obtained from the information in Tables.

⁸ Note that in the UK, any price spike above \$A180/MWh is the subject of automatic and detailed investigation. Similar actions are triggered by price spikes of quite modest magnitude in other competitive markets.

⁹ Including truly independent decision making by the owners.

interconnection between Victoria and NSW has imposed competitive discipline on the otherwise uncompetitive NSW generation structure. The generation structure in both Queensland and South Australia is quite uncompetitive (and therefore prone to market power abuse), even ignoring the common factor of near-100% Government ownership of all of the entities.

These market power problems might have been expected from an examination of the Herfindahl-Hirschman indices of the various States¹⁰. While only a screening test, this index is a good first indication of potential market power problems and is used by the Federal Trade Commission in the USA, the UK regulator and in Scandinavia. One must also remember that the UK experience shows that, even with a satisfactory HH index (around 1500 or so), the use of a mandatory, single priced pool can still lead to market power problems due to the fact that the price is "set by the few but applies to the many".

Bardak calculates the following HH indices for the various States in their present form¹¹ :-

South Australia	2961
NSW	2291
Queensland	2032
Victoria	1486
Vic/NSW region	1046

Only Victoria as a single region, and Victoria/NSW as a combined region, would indicate freedom from market power concerns. South Australia, NSW and Queensland all indicate that attention is warranted, and South Australia is of particular concern.

It is perhaps not surprising that the experience with the National Electricity Market mirrors this analysis. We are not achieving competitive market outcomes in any of these States (Victoria and Vic/NSW come the closest to this outcome, but only because of the effect of the Victorian structure and level of competition that this imposes on NSW).

This is not to say that substantial economies in the production of electricity have not been made - they have and they have been very substantial in most of the States. **However, the lower cost of production is not finding itself into the prices paid by end consumers.** This should also be a cause for some concern to the ACCC and to Governments.

The average pool prices also show up the problem posed by the failure of the National Electricity Market to deal appropriately with new interstate interconnections (very ironically, one of the major aims of electricity market reform when it began in 1991).

Were the differential in South Australian and Victorian pool prices to persist for the remainder of the year, the settlement surplus amount accumulating due to the pool

¹⁰ The sum of the squares of the market share in a given market. An index of 10000 indicates a monopoly and indices around 1500 or less are usually taken to indicate acceptable levels of competition.

¹¹ Ignoring the common Government ownership in NSW, Queensland and South Australia.

price differential will be some \$105 million for the year.

Less than two years of such amounts would be sufficient to entirely fund a new interconnection of sufficient size to effectively eliminate the effect of constraints between those two States.

Indeed the rules being proposed by NECA for “entrepreneurial interconnectors” only provide revenue to the owner if a persistent differential in pool prices exists between the Regions joined by such an interconnector.

This is a perverse outcome and provides perverse incentives to the owner, as the primary aim of new interconnectors should be to eliminate as far as possible, price differentials due to network constraints and to lower the total cost of electricity to consumers in the Regions.

In the short term, this pool price differential and associated settlement surplus represents a dead weight loss to consumers (especially in South Australia), and is vivid testimony to the fact that Australia has a way to go to achieve a properly efficient and competitive national electricity market.

4. Evidence of Market Power Problems

There is already considerable evidence that market power problems exist in the States where inadequate competition has been created. Some examples which Bardak has observed are described in what follows.

We should stress that we are not implying any illegal actions by the participants in the National Electricity Market in listing these problems.

Once the rules are set and authorised by the ACCC, then one cannot blame participants for exploring the extent allowed by the rules in order to maximise the proceeds available to them.

Where we point out problems, it is to urge the ACCC to examine the rules themselves and the structure of the market, rather than to take actions against individual participants.

4.1 Bidding behaviour in NSW, SA and Old without competition

One of the criteria used in international competitive markets is that the bids from a facility during periods when it does not face workable competition should not depart significantly from its bids when it is required by market conditions to bid competitively¹².

It is evident that in the NEM, bidding practices vary considerably from this ideal whenever generators possess market power. This is so when interconnectors are constrained, when generators have market power in a particular region, when generators come on because of rate-of-change limitations in lower cost plants, and when generators possess market power in the provision of ancillary services.

¹² See the criteria used by the New York ISO described in the following Section of the submission.

In South Australia, for example, the generators in South Australia are exposed to competition only when the interconnection with Victorian is unconstrained. This only occurs some 20% of the time - overnight and at weekends normally. At other times, the South Australian generators (especially Optima Energy) obviously possess market power and can set the SA pool price. Bardak has observed that the bidding behaviour changes quite radically as soon as the interconnection becomes constrained. Bids which have been close to known incremental costs, suddenly increase to medium and high values - values well above incremental costs.

In a recent analysis of a sample week, the differential between South Australian and Victorian pool prices when the interconnector was unconstrained was only \$4.9/MWh (on a Victorian average price of \$19.8/MWh). For the same, week, the differential when the interconnector was constrained, was \$25.60/MWh. Bidding differently under competitive and non-competitive conditions is one of the tests of market power commonly used overseas (see later in this Submission).

In the energy-only pool which currently exists in Australia, and in the absence of any capacity payments or ancillary services payments, it is acknowledged that generators must bid higher than incremental costs in order to recover as much of their fixed costs as competitive conditions allow. Knowing the typical cost structures of the various generators and the actual or predicted load factors which they will operate at, an estimate can be made of the average bid prices necessary to recover actual fixed costs and a fair return on investment.

Bidding so as to achieve these levels is understandable, but bidding at higher values when market power is held - often much higher - indicates a problem which needs to be addressed. This is clearly the situation in South Australia.

Similar examples, but not so obvious, can be quoted in Queensland and in NSW. The Queensland Minister has recently acknowledged "structural problems" in that State¹¹ and provided examples where bidding behaviour is of concern in Queensland. The examples given later in the case of NSW on the 4th August and 19th September, are also relevant.

4.2 Exploitation of particular system conditions

There are now a number of examples where particular system conditions have allowed a position of market power to exist, and where actions have been taken which substantially increased pool prices.

As stated above, such conditions apply for long periods of time in South Australia,, given that the interconnection with Victoria is constrained for up to 80% of the time. They also exist in Queensland, due to the transmission limitations between the three general areas within the State.

They have also occurred in NSW, and the incidents of August 4th and 19th September are relevant examples. In both cases, due to outages, the interconnection from Victoria was limited in capacity and running full towards NSW, leaving the

¹¹ See the letter to Ministers dated 12th August and attachment, dealing with the proposal to remove the 90 minute rebidding rule, published on the NECA website.

NSW/Snowy generators to set the pool price and possessing obvious market power.

The event of the 4th August has been investigated and reported upon, but Bardak is not aware of any investigation of the similar event on 19th September.

On the 4th August, the NSW pool price reached almost \$5000/MWh for a period in the early morning, substantially lifting the average NSW pool price for that day. A similar situation occurred on the 19th September.

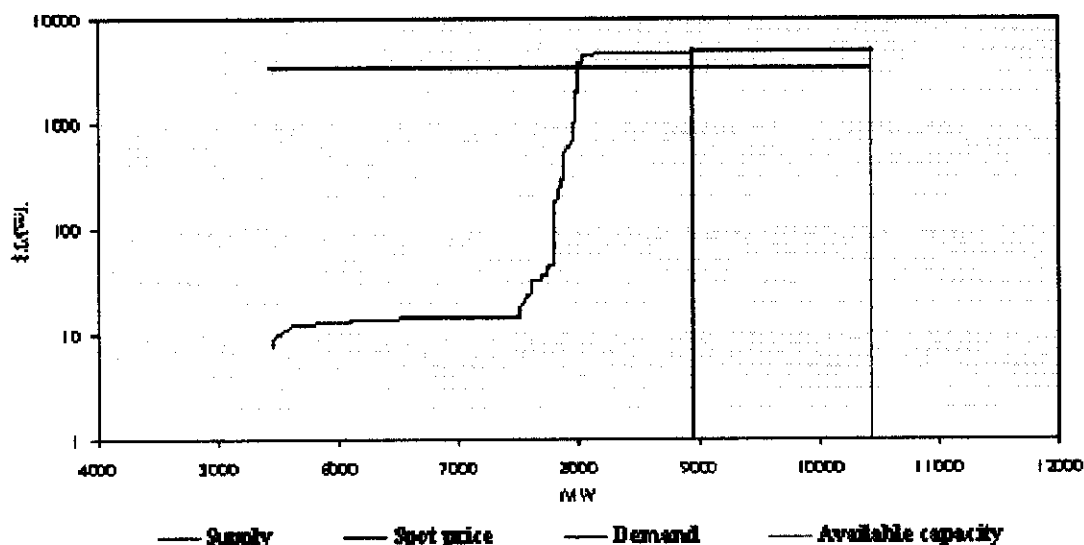
The graph below has been extracted from the NECA review of the events of the 4th August. It shows the regional supply curve for the trading interval of interest on that day.

Fully 2500MW of capacity made available in NSW at that time (24% of the total capacity) was bidding at prices close to \$5,000/MWh - the presently allowable upper limit.

But most of this capacity is known to have an incremental cost of only around \$14/MWh, and in a competitive market, would not be able to bid much above this figure (see the criteria used in overseas markets in the next section).

This is a prime example of "gaming" of the market, and taking advantage of a particular system operating condition in a manner which would not occur were a proper competitive market in existence. Unfortunately, such behaviour is allowed under the present Code provisions.

Figure 2: NSW regional supply curve for the Tam trading interval on 4 August



Availability of Capacity in Old and SA

There is considerable reason to be concerned that the market rules do not provide sufficient incentive for capacity to be offered to the market, especially in situations where withholding of capacity (which is allowed under the Code) would require the operation of higher cost plant and therefore lift the pool price above levels otherwise

prevailing.

For a generator possessing market power, providing that the reduction in volume of sales is more than matched by the increase in pool prices which results from holding back capacity, then this action will result in increased revenue and be rational under the Code rules.

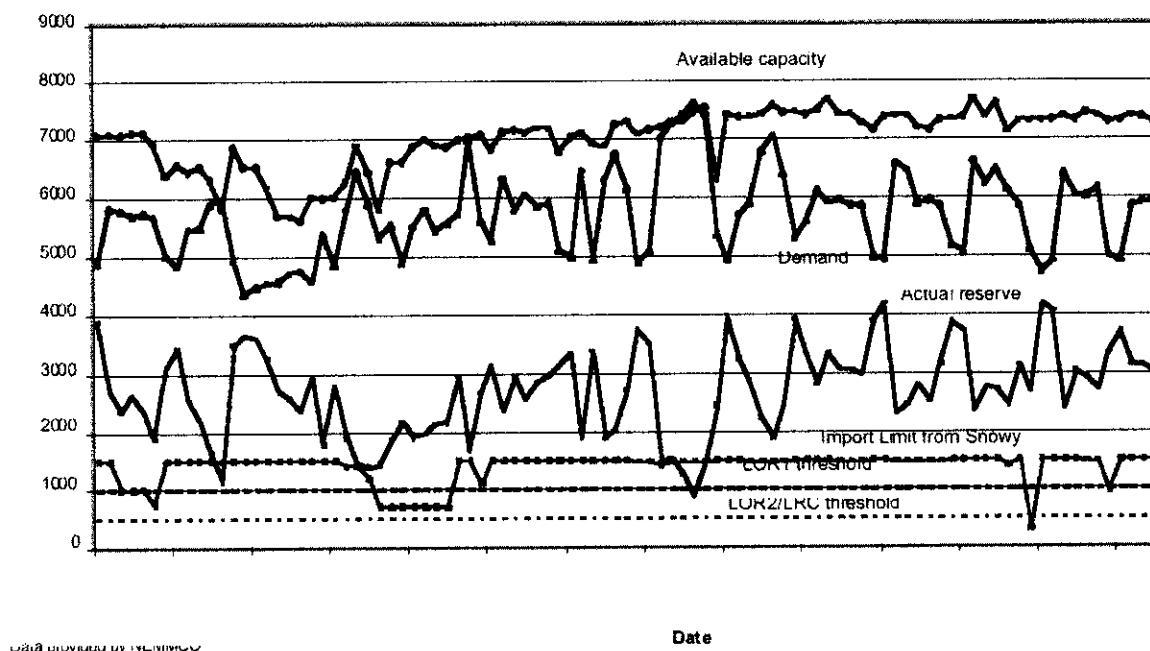
The problem of capacity withholding was not evident in the trial State markets or in the NEM1 market. Indeed, it became accepted wisdom in the very competitive Victorian market that all capacity physically available would be offered and would compete for market share. Any withdrawal of capacity would mean that some other independent generator would simply take up the slack and rob the original party of volume, without causing any significant increase in the pool prices.

The graphs below is extracted from the NECA/NEMMCo reports of the capacity made available for loading during the 1999 peak summer period¹⁴.

The "available capacity" - meaning capacity made available to NEMMCo for loading¹⁵ - was consistently at or around the level of installed capacity in the State. Less than 4% was unavailable on the day of peak demand, and a similar situation prevailed in NSW. Even the 500MW Newport unit, ostensibly undergoing a re-instrumentation program and not available during the summer months, presented itself whenever loads were high and high prices were in prospect.

Appendix 1.7

Victoria
December 1998 - March 1999



¹⁴ See the NECA and NEMMCo reports of the Summer Period of 1999.

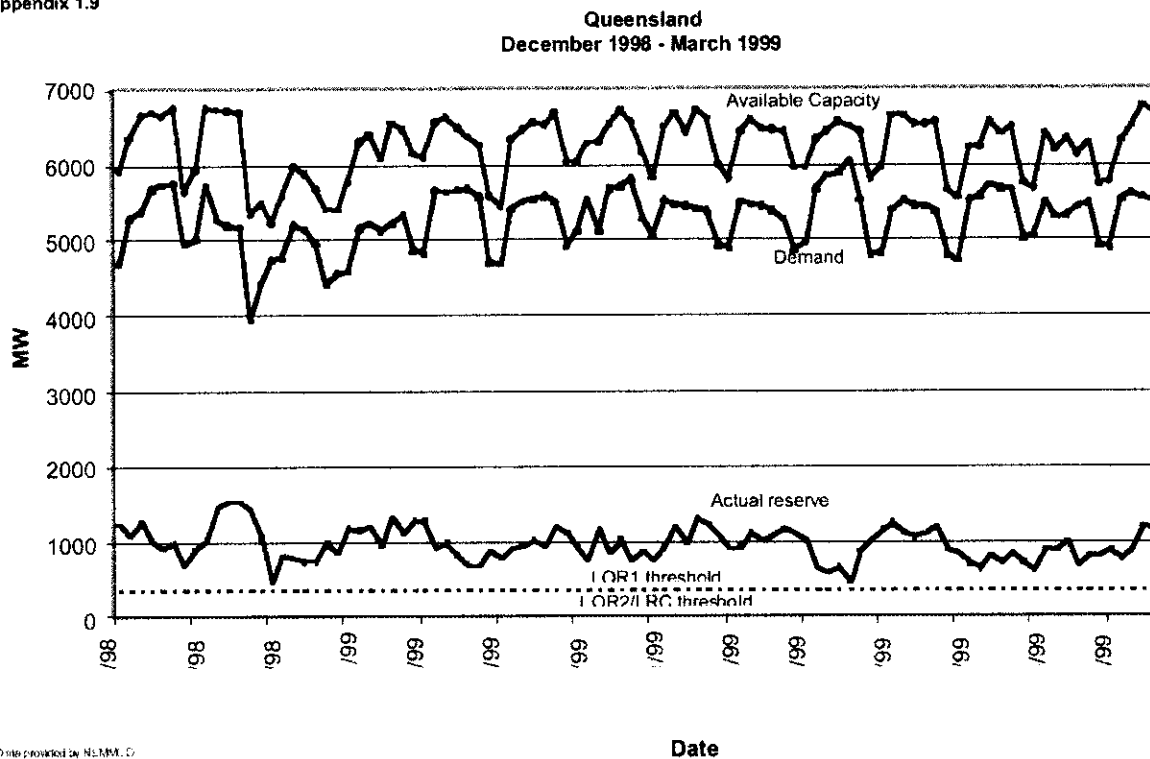
¹⁵ As distinct from capacity physically available for service.

However, in Queensland, there is some evidence of capacity being held back and not being offered for loading.

The equivalent graph for Queensland is shown below. Unlike a pattern of organised or random outages of plants, the capacity made available tended to follow the shape of the load curve, indicating that sufficient capacity was only being offered to meet the load expected on the day, rather than competing for market share (as would be expected in a fully competitive market). The Queensland pool price during this period exhibited many high priced peaks and an average price in excess of \$80/MWh, indicating that insufficient low cost capacity was being made available to prevent the need to operate the very high bidding peaking plants (gas turbines and Wyvenhoe).

More recent periods have shown much lower Queensland average pool prices and a lower incidence of price spikes. Bardak is unaware of the reasons for the change in behaviour, but the direction of change is most welcome.

Appendix 1.9



Data provided by NEMMCO

The problem of withholding of capacity really became evident in South Australia this year. The equivalent graph for that State is shown below. The installed capacity in South Australia (including the interconnection with Victoria) was around 3000MW for this period.

It is apparent that on most of the days in this period (and since) several hundred MW of the installed capacity in South Australia was not being offered for loading - in a pattern which created an artificially tight supply/demand balance for most of the days. As a consequence, gas turbines were repeatedly called upon to operate over this period, bidding at very high prices, and lifting the average pool price in the State to around

\$50/MWh.

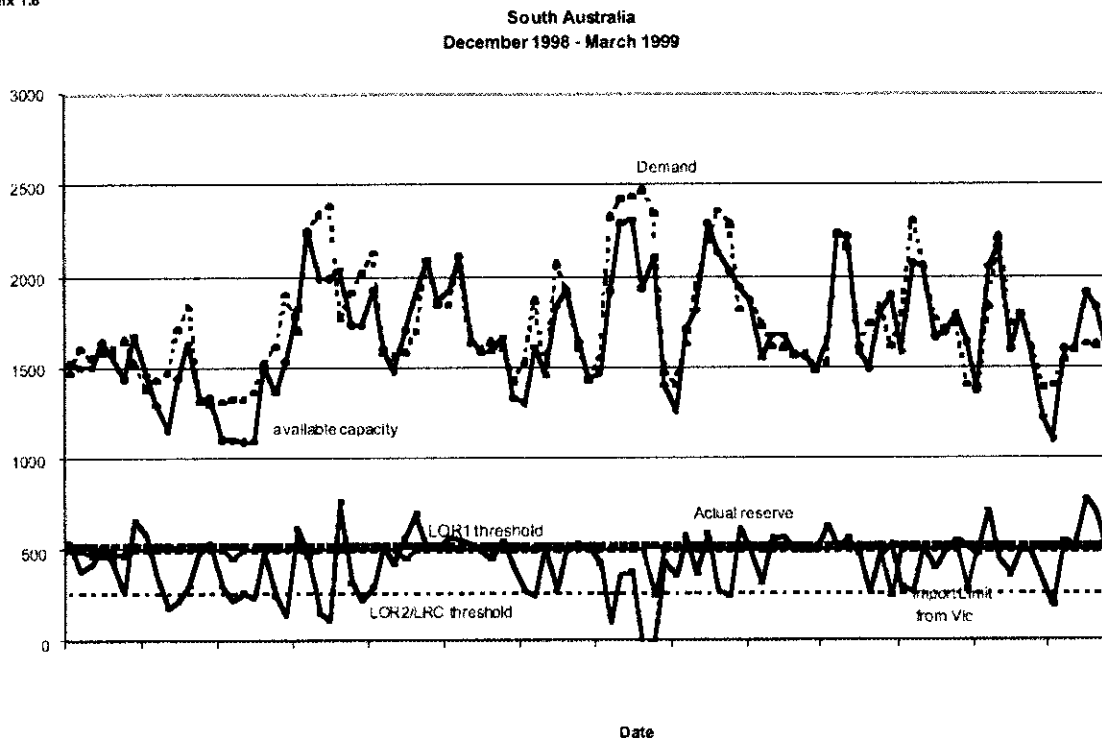
Bardak is aware of some plant problems over the period, but at the same time South Australia claims to be experiencing very high plant availabilities, and the extent of plant not being offered for loading goes well beyond any normal incidence of planned or forced outages.

It seems very clear that the present Code rules do not provide sufficient incentive for plants to offer themselves for loading, when they possess market power.

Optima Energy is very obviously in this position in South Australia. When the gas turbine plants are bidding very high prices (as is virtually always the case in South Australia), any loss of volume is much more than compensated for by the increase in the South Australian pool price, set by the bid prices of the Synergen gas turbines.

Withholding of capacity in South Australia appears to have been a contributing factor to the events of the 23rd October 1999, when extensive load shedding took place on a Saturday morning, when system demand was very low, and the pool price reached \$5000/MWh. While the initiating event was the loss of a second line on the interconnector, only two out of the eight Torrens Island units were operated on that day, leaving NEMMCo to have to call upon gas turbines to cover the requirements, which proved to be inadequate, and customer load had to be shed.

Appendix 1.8



DISPATCH, NEMMCO, NEMMCO

Market Shares in NSW

Bardak finds it interesting to compare the pattern of behaviour of the independent

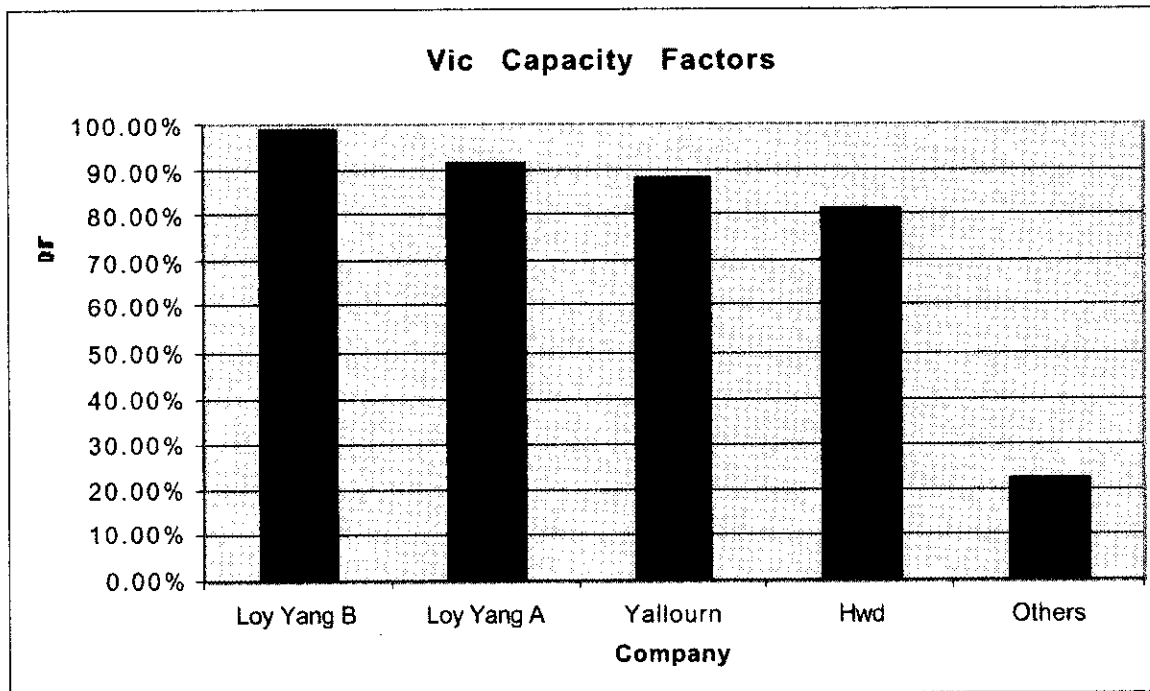
generators in Victoria (where the operation of the market is generally competitive) with that of NSW, where, although corporatised, all three generators are owned by the Government.

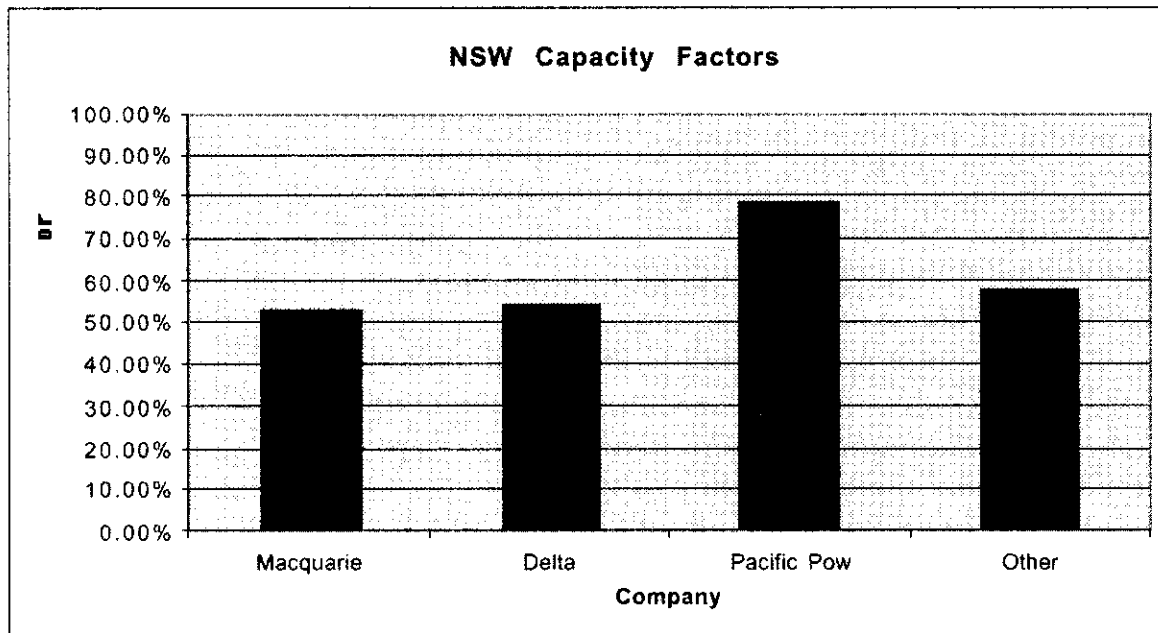
In Victoria, there seems little doubt that the low cost producers seek as much market share as their plant capacity and physical availability allows. Loy Yang B, Loy Yang A, Yallourn and Hazelwood all operate this way. In a competitive market, one would expect that the resulting capacity factors would reflect the relative incremental cost position, with the low cost plants having a higher load factor than the higher cost plants.

This indeed is the case, with the capacity factors of the Victorian plants in the last six months of the year being shown in the graph below.

However, the same behaviour appears not to be evident in NSW. It is known that Macquarie has the lowest average cost of coal of the three generators in NSW and Pacific Power the highest. One would expect that Macquarie would operate at a high load factor (comparable to some of the Victorian generators) with Delta and Pacific Power operating at lower capacity factors.

The actual experience for the same period as above is also shown below. The load factors are not what would be expected from a competitive market.





It raises suspicions that reasons other than full competition are governing the bidding patterns of the NSW generators, with the possibility of market power problems being evident. In any event, the behaviour is not what would be expected from an efficient competitive market.

Queensland and South Australian Rate of Change Problem

In the recent Draft Determination on the National Electricity Code, the ACCC declined to accept a derogation from Queensland seeking to retrospectively reset pool price when it became apparent that a price increase was due to market power being exercised due to rate-of-change of loading limitations on generators which would otherwise set the pool price at that time.

However, this rejection was more related to the proposed derogation being considered to be the wrong way to address the problem, rather than because the problem does not exist. The ACCC stated, in relation to this matter:-

“ Further, the Commission considers that if a market power problem exists, it is better dealt with by a different market mechanism, which could involve either treating certain fast start plant as an ancillary service or contracting arrangements”.

The ACCC seems also to be unduly swayed by statements made by CS Energy that Wyvenhoe (the plant in Queensland most likely to possess market power in such circumstances) only sets the price for 0.5% of the time. 0.5% of the time amounts to 44 hours per year. Were the spot price to reach \$5000/MWh during these hours, the effect of the 0.5% of time would be to increase the average annual Queensland pool price by some \$25/MWh! This may be an extreme example (although Queensland experienced many occasions when the spot price hit \$5000/MWh in the early part of this year), but it illustrates how the potential exercise of market power on such infrequent occasions can have a major effect on the average annual pool price.

Bardak has observed that the problem of price spikes due to rate-of-change limitations is not confined to Queensland alone. South Australia also experiences severe price spikes due to rate-of-change limitations at Torrens Island, which cause the Synergen gas turbines to operate, normally bidding at extremely high prices.

While the Queensland derogation may not be the way to proceed in these circumstances, the rate-of-change problem associated with market power certainly exists in at least two States and needs early attention.

Rebidding Frequency and Magnitude

Rebidding is known to be a problem in the NEM, and is currently under detailed examination. The essential problem is that the flexibility required to allow participants to adjust their positions for bona fide reasons (physical problems with plant, unexpected load increases etc) also allows "gaming" of the pool price by rebidding to take advantage of changed system conditions.

The incidence of rebidding in the NEM (as documented by NECA and NEMMCo) is very high, and much higher in Queensland and South Australia than in the other States. These States are also the ones with pool prices much higher than those of Victoria and NSW - implying that market power issues may well be involved in the use being made of the rebidding arrangements.

Given that the matter is under discussion, Bardak does not intend to dwell on the nature of the problems here, but simply to record this area of the Code as a potential, (and probably actual) area of concern in relation to market power issues.

Ancillary service charges

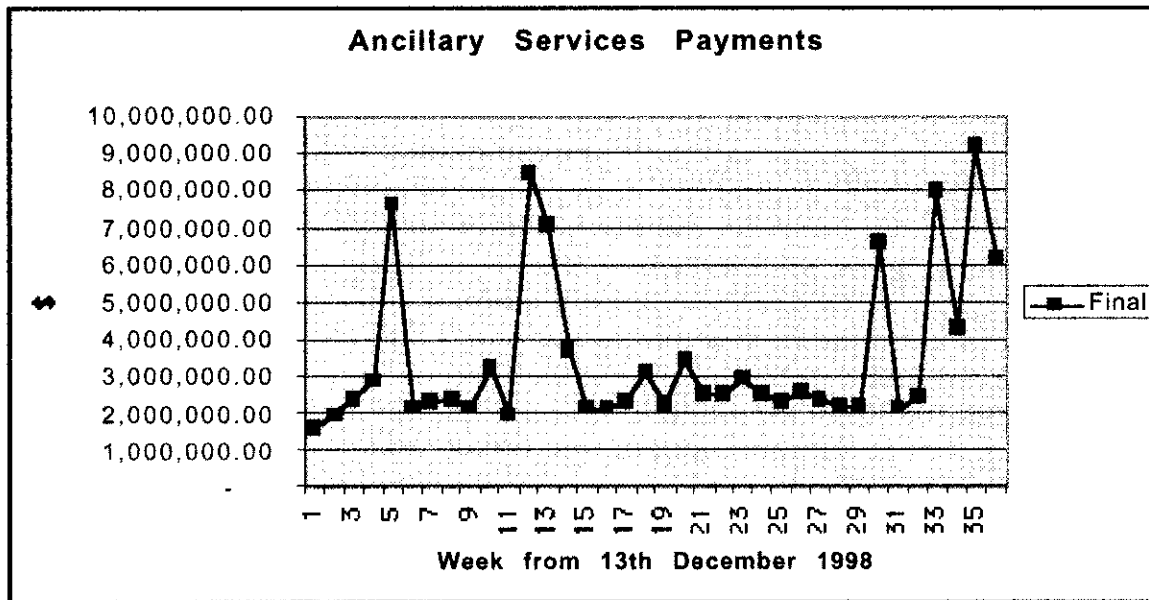
There is an obvious problem with the provision of ancillary services and the opportunities available to the small number of participants able to provide the various ancillary services to exercise market power.

The level of ancillary services payments is a cause of increasing concern in the NEM. Payments are much higher than predicted and expected and are becoming a significant addition to the electricity contract and pool prices (as is true of NECA and NEMMCO charges in general). These payments are inevitably passed through to contestable customers by the retailers, and are not regulated or supervised in any way at present.

The level of ancillary services payments for the first nine months of the 1999 calendar year are shown below (for the combined Vic/NSW/SA and Queensland regions). Payments have averaged over \$3.5 million/week and exhibit worrying weeks of extremely high costs.

Note the significant increase since new contracts came into effect in mid-year.

At this rate of expenditure, ancillary services payments will exceed an average of \$1.2/MWh for the year - much higher than expected by retailers and customers and much higher than experienced in the NEM1 market.



Few details are made public by NEMMCo on the nature of the ancillary services contracts and the recipients of the contracts, and as noted above, NEMMCo's activities are not regulated or supervised.

It is known that NECA was moved to write a letter to NEMMCo¹⁶ expressing concern at the practice of some participants to "manipulate" the provisions of the contracts and to extract much higher payments than they were entitled to. NEMMCo was requested to renegotiate the contracts to eliminate the causes of the problems.

The lack of information made available on this matter inhibits the assessment of the extent of market power problems in ancillary services, but the level of payments being made and the NECA letter provide prima facie evidence that market power problems exist in ancillary services which require attention.

5. Market Monitoring and Market Power Mitigation Measures

Instead of authorising the proposed changes put forward by NECA, Bardak is of the view that the ACCC should require the implementation of a better and more independent market monitoring activity, and depending on the findings of that activity, to implement appropriate market power mitigation measures where required.

There are many overseas precedents for this approach.

Indeed no overseas competitive market known to Bardak would allow many of the practices already evident in the Australian NEM.

To assist the thinking of the ACCC in this matter, we provide four examples of modern international practices, two of them very recent.

¹⁶ Letter dated 22nd of July from NECA to NEMMCo, published on the NECA web site.

5.1 Market Monitoring in the Californian Power Exchange

The Market Monitoring Committee of the California Power Exchange sets a “benchmark of behaviour under perfect competition”, where they expect that:-

- bids will be at or very close to marginal costs (plus small markups to spread startup costs at times);
- price will be above the marginal costs of most units that are generating;
- prices will sometimes reach quite high levels - when demand exceeds supply;
- not all units will be offered on-line during periods of low predicted prices but capacity will not be withheld simply to drive up prices.

Participant performance is monitored against these benchmark to assess acceptable behaviour. A recent report is available which provides further details¹⁷.

5.2 Market Monitoring in the PJM Market¹⁸

The PJM Market Monitoring Committee:-

- uses market concentration measure as a “first screen” of potential structural problems (the same Herfindahl-Hirschman Index used earlier in this submission);
- examines barriers to entry to see if new entrants are free to join;
- examines market conduct;
 - ¶ are prices being raised above costs by curtailing output?
 - ¶ are bids consistent with costs?
- examines pricing outcomes;
 - ¶ are prices below the marginal cost of the highest cost plant?
 - ¶ how often are prices near the price cap of \$1000/MWh?
 - ¶ are average prices near the new entrant price level (capital servicing included)?
- examines congestion behaviour;

¹⁷ See the “Second Report on Market Issues in the California Power Exchange Energy Markets” prepared for FERC by the Market Monitoring Committee of the Californian Power Exchange dated 9th March 1999. This is available on www.calpx.com web site.

¹⁸ Pennsylvania- New York - Maryland (PJM) - one of the oldest power pool areas in North America.

- ¶ is congestion being used to strategically manipulate prices?
- ¶ are price differentials between regions significant?

A recent report is available to provide further details¹⁹.

5.3 Market Monitoring and Market Power Mitigation in the New York Market

The New York area is the latest competitive market to begin operation (October 1999), and as such represents the latest example of a FERC-approved market monitoring/market power mitigation plan. The New York Independent System Operator was required to submit a comprehensive plan for both activities prior to the start of the market^{20,21}.

The Market Monitoring Plan for the NYISO includes the following features:-

- the establishment and resourcing of a Market Monitoring Unit (MMU) within the NYISO establishment, reporting to the CEO;
- the appointment of an outside expert individual "Market Advisor", with certain key roles assigned to him, and an ability to independently and directly report to the Board of Directors;
- access to data from participants, with ultimate recourse to the dispute resolution procedures if a participant is reluctant to part with information. This may go as far as accessing business plans and strategies and commercially sensitive cost data;
- a requirement to develop performance indices and screens to assess market performance;
- assigns the MA to task of developing specific market power mitigating measures, along with standards to determine actual of potential existence of market power requiring a mitigation measure (subject to NYISO Board and FERC approval);
- authorises the MMU and CEO in consultation with the MA, to take action to "remedy any actual or potential abuse of market power, or any other conduct that impairs or threatens to impair the competitiveness or efficiency of the markets";
- protects the MMU, CEO and MA from "the chilling effect of the threat of litigation".

¹⁹ See the "PJM Interconnection State of the Market Report", prepared for FERC by the market Monitoring Unit of the PJM Interconnection, dated May 1999. This is available from the www.pjm.com web site, along with other similar references.

²⁰ Filing to FERC from Hunton and Williams, "Market Monitoring Plan, ER97-1523-000, OA97-470-000, ER97-4234-000" dated July 26th 1999 and available on www.nyiso.com.

²¹ Filing to FERC from Hunton and Williams, "Market Monitoring Plan, ER97-1523-010, OA97-470-009, ER97-4234-007" dated August 23rd, 1999 and available on www.nyiso.com.

The initial set of market power mitigation measures includes the following features:-

- establishes two criteria to be satisfied before a mitigation measure can be invoked, based on the principle of detecting “conduct that significantly departs from that which would be expected in a workably competitive market”, specifically:-
 - ¶ conduct significantly inconsistent with competitive conduct, and
 - ¶ conduct which results, or threatens to result, in a material change of one or more prices in the market.
- anti-competitive conduct may include:-
 - ¶ physical withholding of an facility;
 - ¶ economic withholding of a facility (e.g. lodging unjustifiably high bids);
 - ¶ uneconomic production from a facility (e.g. altering output to uneconomic levels to cause and obtain benefit from, a transmission constraint)
- an example given is a sharp increase in bids from a particular generating unit which is not as a result of a sharp increase in fuel costs;
- the ability to restrict the type of bids which a particular market participant may otherwise make, intended to “ensure that the bids from a facility during periods when it does not face workable competition do not depart significantly from its bids when it is required by market conditions to bid competitively”. This could require limitations on the frequency and magnitude of changes in bids; the use of a single bid, rather than multiple blocks of capacity at different prices or requiring a single bid to apply for a specified period;
- the ability to impose a penalty if a case of physical withholding of capacity is detected;
- the ability to impose “default bids”, which may specify maximum and minimum values and may be based on “reference price” developed from bids made during periods when the facility is required by market conditions to bid competitively, by reference to actual cost data, or by reference to bids made by similar facilities;
- examples are given of the initial set of data, indices and screens to be used to monitor performance of the market. One of these is a Residual Demand Index (RDI), designed to identify the % of demand that a supplier holds an effective monopoly over - assuming that all other participants operate at maximum capacity.

5.4 Market Monitoring and Market Power Mitigation in the UK

Despite having taken the decision to “radially reform” the trading system in England and Wales, OFGEM remained concerned about the exercise of market power in price setting in the existing, compulsory single priced E&W pool. After repeated investigations of high pool prices - including three in the last three years - OFGEM now proposes²² to alter the licence conditions of the major players to “curb any exercise of market power”.

OFGEM states that:-

“There is a history in the electricity industry of Licencees pursuing a variety of different courses of conduct that have in common the fact that they have each influenced Pool prices in ways that differ substantially from the evolution of prices to be expected in a competitive market”.

OFGEM proposes to:-

- insert a new licence condition which prohibits “an abuse of a position of substantial market power in the setting of wholesale prices for electricity under the relevant trading arrangements”. Any breach of this provision would be a full breach of the licence conditions;
- establish “benchmark bidding and capacity availability strategies” for all licencees, based on “estimates of how the licencees might behave in a fully competitive market”;
- define what amounts to a substantial change in market prices caused by the use of market power (suggesting more than a 5% change for a cumulative duration of more than 30 days in any one year (not necessarily consecutive));
- provide guidelines as to what is likely to be considered to be a breach of the conditions, stating the following examples²³ :-
 - ¶ Any behaviour designed specifically to exploit known or unknown shortcomings or loopholes in the Pool rules (e.g. redeclaration of capacity);
 - ¶ A significant increase or decrease in the price at which plant is offered to the Pool on occasions when there is no corresponding change in costs or level of output of the plant in question (e.g. recent increase in bid prices by major generators not associated with cost increases or change of load factor);
 - ¶ A significant change to the structure or composition of bids, again with no corresponding change to the level of costs or level of output (e.g. changes in bids during the last winter. Although the output of the stations in question remained unchanged throughout the period analysed, very large changes in the structure of the bids used occurred);

²² “Rises in Pool Prices in July - A Decision Document”, OFGEM October 1999.

²³ See Appendix 2 of the above document for the Draft Guidelines.

- ¶ Bidding designed to exploit local market opportunities, some of which may be short-lived in nature. (e.g. plants which must be operated for voltage control reasons or specific characteristics).

5.5 Application in Australia

The provisions of the National Electricity Code and proposed actions by NECA (involving the use of a “Statement of Ethics”), pale into insignificance compared to these precedents, and are clearly inadequate. It is obvious that overseas experience demands that more appropriate action is taken in Australia, especially given the extent of market power evident in most of the States.

Bardak recommends that the ACCC require the implementation of both independent market monitoring and, as necessary, market power mitigation measures along the lines of best international practice as outlined in this Section of the Submission.

The first priority of the independent market monitoring entity should be to prepare a “State of the Market” report, assessing the extent of market power issues in the NEM and recommending Code changes necessary to alleviate or control market power issues found to be significant.

It would also help if the ACCC were to set out, in terms similar to the above, its expectations/guidelines for the behaviour expected of properly functioning and efficient electricity markets to act as a guide to the market monitoring activity.

6. Specific Comments on the NECA Proposals

Bardak has already made its position clear on its opposition to the Code changes proposed by NECA. However, there are some comments which can be made which are relevant.

Firstly, a mandatory single priced pool, should have provision for capacity payments if it has any chance of replicating the results of a fully competitive market.

The theoretical underpinning for this was developed in the 1960’s by Turvey in the UK and Boiteaux in France, but the end result has more recently been summarised by Rudnick as follows. Under economically optimum conditions:-

“Income obtained from selling all energy at the short term marginal cost, plus income obtained from selling capacity at the development cost of peaking units, is equal to the cost of capital plus total generation operation costs”²⁴.

Operating generators should be remunerated at the marginal cost of providing peaking capacity (usually, but not always, the capital and O&M charges of open cycle gas turbines). This payment is necessary such that both the short run and long run price

²⁴ Meaning independent of both NECA and NEMMCo. An old Irish saying has it that - “Whose bread we eat - whose song we sing”.

²⁵ Taken from Rudnik, paper presented in the USA in 1999, and available from the web site of the Catholic University of Chile.

of electricity will be the same, if all other factors are optimised²⁶ .

This principle underpins the reforms which have taken place in South America, and was also the reason why capacity payments were included in the UK pool (but not the subsequent decision to link the level of payments with the LOLP).

Thus the NECA recommendation for the NEM to remain as an energy-only market is flawed, even if one has faith in the compulsory, single priced pool.

Secondly, and as pointed out above, the single price of electricity is not what would result if a fully efficient electricity market was in existence, since the single price inherently contains myriad cross subsidies, and fails to allow the matching of the economics of power production with the characteristics of the load, and supply it at least cost.

Thirdly, even the Reliability Panel qualified its recommendations regarding the level of VoLL with concerns over market power issues - although the matter of gaming is not within the ambit of the Panel's role.

They said²⁷ :-

“Although the matter of market gaming is not within the ambit of the Panel's role, the Panel notes that a further source of risk is the potential gaming of market price. It has earlier been noted that efficient market prices can be volatile, particularly over the short term. Provisions of the code which allow market participants to efficiently respond to that volatility also allow the possibility of abuse if there is insufficient competition to counteract its effect. An increase in the level of the market price cap recommended in this report will have the effect of increasing the alternatives for balancing supply and demand under extreme conditions when abuse is potentially attractive. It will also reduce any perceived need or justification to act in a non-competitive manner. However it will also increase the potential return from it.”

No concern is expressed in the NECA proposals for the obviously increased possibility for gaming inherent in the proposal to increase the value of VoLL. This is a major flaw in the NECA proposals.

The Reliability Panel also states that “The primary role of VoLL in the NEM is a price cap and its secondary role is that of default demand side bid.”. This statement also helps to clarify the real place of VoLL in an energy-only, single priced market.

For all but extreme cases of non-supply, it is nothing more than an upper limit on the bids able to be made by all generators in the market.

The example always given by proponents to justify the need for a high bidding cap is the case of a peaking generator operating for just a few hours of the year. It is claimed that such a generator has to bid very high prices in order to recover sufficient revenue

²⁶ Such as reserve margins, plant mix, flexibility, minimum lead times, minimum effect of scale and so on.

²⁷ Reliability Panel, final report on the “Review of VoLL in the National Electricity Market”, July 1999.

to cover fixed costs and a reasonable return on investment. This argument suffers from several basic flaws:-

- peaking generators are the most likely to be recipients of ancillary service contracts (for spinning reserve, black start, voltage control and frequency control) and revenue available from these sources must be taken into account. They can be significant;
- the amounts of money involved in covering fixed costs of peaking plants are very small in relation to the overall payments for energy in the NEM, and to allow increased opportunities for all other generators to lift pool prices (where market power exists) is not sensible practice. It is much better to deal with the problem directly via capacity payments;
- even if there is a case for these peaking generators to be able to bid up to the prevailing price cap, there is no justification or logic in allowing all generators this degree of freedom. As was evident in NSW on the 4th August last, to have generators whose incremental cost is around \$14/MWh and whose need for average revenue is around \$30-35/MWh, being allowed to bid up to \$5000/MWh, is quite irresponsible and an open invitation for market power to be abused where it exists.

Other overseas markets place strict caps on the allowable bidding range to prevent abuses of market power.²⁵ It would be more logical if this were to be the practice in Australia while the current pool structure exists.

For so long as Australia persists with a compulsory, single priced, energy-only pool system, and market power problems exist in some of the States , the value of VoLL should be severely reduced to prevent abuses of market power, not increased as proposed by NECA.

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²⁵ California presently operates with a price cap of only \$US250/MWh for this reason. Alberta has a price cap of \$C1000/MWh. Most South American countries require generators to bid at audited incremental costs, or within a band approved by the regulatory agency.