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6th August 2003

Mr. Sebastian Roberts
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Dear Sebastian

Submission on Matters Raised at the ACCC Market Review and Competition Benefits Test, Melbourne, July 28th

I attended the above Forum and wish to respond to the invitation offered by Ed Willett at the conclusion of the day to make comment on matters which were raised.

I should emphasise that these comments come from Bardak as an independent consultant and commentator on energy matters. The work has not been supported by any other party.

Some of these comments relate to the ACCC review of the Regulatory Test and I would be glad if the attached could be treated as a submission to that review.

I would be happy to discuss any of these comments with the ACCC staff.

Yours sincerely

Rob Booth

Dr Robert Booth
Managing Director

Bardak Group

Submission to the ACCC

Matters Raised at the Market review and Competition Benefits Test Forum, Melbourne, July 28th

Bardak attended the Forum and wishes to make comment on several matters which were discussed during the day.

1. NEM Performance

Several of the speakers made reference to a recent paper which Bardak had made available on our web site, analysing the performance of the NEM in the year 2002.[1] For completeness, this paper is provided as an attachment to this Submission.

The highlights of this paper which were relevant to the content of the Forum were as follows. All comments refer to the year 2002 situation.

- average annual pool prices exceeded realistic estimates of LRMC in all States[2] ;
- 28% of the annual NEM pool prices were due to price spikes above the SRMC of the most expensive unit in the NEM (the upper limit of price one would expect to see in a perfectly competitive market);
- these price spikes occurred in less than 0.5% of the time;
- most of the price spikes occurred when demand was well short of the peak demand in the Regions, indicating that their primary cause was not shortage of supply, but rather gaming of the pool price (as allowed within the current Code[3]);
- the extreme volatility of pool prices due to price spikes increases the "effective wholesale price" paid by retailers by requiring the purchase of various "risk management" products. Studies in South Australia and Victoria show that, for small customers, the "effective wholesale price" can be as much as 80-100% above the average pool and hedge contract prices;
- if perfect market conditions applied and generators were forced by competitive pressure to bid at their SRMC, annual average revenue would fall short of LRMC and thus not allow recovery of an efficient level of fixed costs;
- even adding a marginal capacity payment to the LRMC bidding case would still not allow the average cost to reach LRMC;

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1 Bardak Ventures, "Pool Prices in the National Electricity Market 2002", published in July 2003, and available for downloading from www.bardak.com.au. Included as an attachment to this submission.

2 See the discussion in Part 2 of this Submission for definition of what constitutes "realistic estimates of LRMC".

3 Practices are allowed in the current Code which would be banned from most overseas competitive electricity markets.

- **thus, even under perfectly competitive conditions, the present design of the NEM produces an unacceptable long term outcome;**

- constraints across interconnections lead to very significant additional costs to consumers. If the lowest price in adjacent Regions had applied in the NEM in 2002 — after adding a 10% margin to allow for losses and possible increases in the price in the exporting state — a staggering $1,260 million would have been saved in 2002 and average pool prices would have been almost 20% lower. This estimate can be wrong by a large margin without taking away from the conclusion that the NEM is failing to ensure that the cheapest available power is utilised. Customers pay dearly for this fact;

- it follows that large expenditures on interconnections and other constrained transmission areas can be justified. $1.2 billion per year saving would service at least $12 billion of capital expenditure — far more than would be required to effectively equalise pool prices across the NEM (apart from loss effects).

2. Estimates of Long Run Marginal Cost

The ACCC needs to be very skeptical of estimates of LRMC produced by generators or consultants hired by generators. The need for care was apparent in the presentation made on behalf of the National Generators Forum at the ACCC Forum.[4] They chose to assume that gas, rather than coal was the new entrant plant in NSW, and used LRMC estimates well in excess of $40/MWh. Even in the case of coal-fired generation, the claim was made that prices in excess of $40/MWh were necessary for "survival".

Their basic assumption are incorrect and the LRMC they claim is far too high. Coal-fired generation remains the lowest cost new entrant, and LRMC's based on coal tend to be in the $30-35/MWh level.

To reinforce this point, the NSW generators have little difficulty in declaring after tax profits of well over $100 million on revenue bases of $500-800 million, at average prices (pool plus contract) of only around $33/MWh.[5]

NEMMCo recently hired ACIL/Tasman to develop estimates of SRMC and LRMC for the NEM.[6] Their estimates, in the main, line up closely with those which Bardak has made from time to time, and we believe that ACCC should use the ACIL/Tasman estimates as the definitive source for SRMC and LRMC data for the NEM.

For the record, the ACIL/Tasman estimates of LRMC, based on coal as a fuel, are:

Queensland	$31.4/MWh
NSW	$34.7/MWh
Victoria	$33.6/MWh[7]

[4] Presentation on "Industry Perspective" by the National Generator Forum at the Forum.

[5] Derived from an examination of the Annual reports of the NSW Generators and ESAA data.

[6] ACIL/Tasman, "SRMC and LRMC of Generators in the NEM", a report for NEMMCo dated April 2003 and available from www.nemmco.com.au.

[7] The estimate for Victoria is the only one which appears too low. Given the past record of capital costs for brown coal stations in Victoria, the chance of a new plant being constructed for the capital cost assumed by ACIL/Tasman is remote.

These figures are well short of those claimed by the National Generators Forum, but are well justified and documented.

In any event, even if new entrant costs are higher than the average cost of existing generation, it is valid to ask the question — why should retailers/customer pay a higher price for power produced from the existing fleet of generating plants than is necessary for them to be adequately viable? The higher price should apply only to power produced from the new facility.

This point strikes at the structure of the trading system, which we deal with later.

3. Comments on the Inclusion of Competition Benefits in the Regulatory Test

There was much comment on the economic aspects of the apparent exclusion of competition benefits from the present Regulatory Test at the Forum, but much of it was inconclusive, couched in unhelpful economic jargon and generally uninformative. Given the intense criticism which has been directed towards the flaws in the present Regulatory Test, the quality of the discussion at the Forum was very disappointing.

Bardak has two comments to make — one dealing with modeling issues and the other to the economic aspects of producer and consumer surpluses.

The study referred to in Part 1 of this submission, makes it clear that generators do not bid at SRMC and indeed could not recover their fair share of fixed costs if they did.

Therefore, while ever the present pool design remains, there is thus little benefit in requiring that this be one of the main assumptions in conducting market simulations. It is simply unrealistic.

The same study also makes it clear that a high proportion of the average pool price outcome is due to extreme and low probability events — specifically 28% of the average pool price resulting from events occurring in just 0.5% of the time.

It follows that a high proportion of the value of an interconnection will be accumulated during these extreme events, and not under average conditions. It is thus important to ensure that the extreme pricing events are correctly modeled.

Although some commentators claim that modeling is difficult,[8] the power industry has been dealing with the modeling of low probability and uncertain events for many years — the original source of the uncertainty being due to poor power plant availabilities, rather than generator bidding behavior, as it is at present. Indeed the principals of Bardak were involved in the early development of computational techniques to overcome the original accuracy problems.[9] Bardak observes that the modeling of the actual pool outcomes in the NEM has improved and is approaching an acceptable level of accuracy — at least in re-simulating past years.

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[8] The presentation by Farrier Swier to the Forum takes this approach.

[9] Dr Booth was the author of the original Monte Carlo model used by the States and is the co-developer of the Booth-Baleriaux method of probabilistic simulation.

In the recently released NEMMCo Statement of Opportunities, three models were used to simulate likely future interconnection effects, and although further work is needed to get closer agreement between the models, their ability to reproduce past pool price behaviour — including the effects of low probability events leading to price spikes, has clearly improved.[10]

NEMMCo and the IRPC should be encouraged to continue their work in "harmonising" assumptions and methodology such that market participants, customers and the ACCC have confidence that the modeling methods being used by the industry can cope with the extreme events and give realistic representations of market performance based on known generator bidding patterns. One hopes that this task will be picked up by the promised National Electricity Commission as one of its priority items.

The second comment concerns the issue of calculating producer and consumer surpluses/welfare in the cost-benefit analysis and the fact that the Regulatory Test does not distinguish between them. In essence, the test treats higher spot prices as a result on interconnector constraints as a transfer from consumers to generators and of no economic consequence. As Sims correctly states, this is a fundamental flaw, as the economic consequences can be significant.[11]

In investigating a transmission augmentation, it must be assumed that the generators are able to recover their costs (both fixed and variable) from the operation of the wholesale market. They have adequate opportunity to do so under the current rules, and as Bardak shows in Part 1 of this submission, have been able to do so in past years. Additional producer (generator) surplus is thus unnecessary, and simply adds to generator profits. Indeed excessive generator surplus can involve the extraction of economic rent or of monopoly profits.

On the other hand, additional consumer surplus has flow-on economic effects, as electricity is but a partial product which is used to produce additional economic value as it is used in downstream productive processes. Sims in Ref 11, points out that any additional consumer surplus can also result in:

- more industry located in Australia, attracted by lower electricity prices;
- efficiency benefits from a more liquid contracts market;
- deferred generation investment and when it does occur, it can be sited where it suits the NEM as a whole, not just an individual State.

Put more bluntly, it defies common sense for the ACCC to promulgate a Regulatory Test that does not credit to consumers the benefit of lower pool prices, especially when the value of the saving may be in excess of $1 billion per year.

As Dennis Warburton of Stanwell Corporation pointed out in his paper at the Forum, a 20% increase in transmission revenue cap would only require approximately a $1.40 reduction in average annual pool price to compensate.

[10] The models used by NEMMCo and the State representatives were Plexos (described in detail at the Forum), Monte Carlo 2 used by TransGrid and PROPHET V8.5 used by PowerLink.

[11] Sims R, "Right Gauge, Insufficient Track", an address to the ACCC Annual Regulatory Conference, 1st August 2003.

If customers are prepared to allow such an increase, in the belief that pool prices will fall by at least $1.40/MWh — which is certain to occur — and on condition that the additional money is spent to increase interconnector ratings, then the ACCC should not hold them back.

Ashok Manglick pointed out in his presentation that customers pay for 98% of transmission charges, and therefore they should have the major say in how that money is spent. Conversely, until generators pay for a significant proportion of transmission charges, the ACCC should pay less regard to their comments.

Perhaps the most sensible comment Bardak has yet seen on these economic arguments came from the Californian ISO, where they state their policy to be as follows:[12]

> "For example, a transmission expansion that has a significant impact on reducing market power will, for the most part, simply shift welfare from producers to consumers. A conventional social welfare objective in which producer and consumer welfare are given equal weights would show very little net benefit because such a criteria does not consider the distribution effects. It only measures the net effect.
>
> However, public policy makers generally do care about distributional effects and therefore benefit measures that reflect the distributional effects are essential to the methodology.
>
> This document sets out the principles of cost benefit analysis and provides three benefit measures for policy makers to consider in evaluating a transmission expansion;
>
> 1) an approach that gives equal weight to both consumer and producer surplus (i.e. the conventional social welfare objective),
>
> 2) an approach that gives equal weight to consumer benefits and the competitive portion of producer benefits (i.e. ignores any benefits that accrue to suppliers from market power), and
>
> 3) an approach that only looks at benefits to consumers
>
> .
> Since different decision makers can take different views of the merits of these measures, the most useful output from the transmission valuation methodology will be the building blocks necessary to evaluate the given transmission investment project under all three different objective functions."

4. Comments on the Control of Generator Market Power

Despite the arguments presented above, which generally favour additional transmission augmentation to reduce pool prices and control generator market power, there is a caveat which is necessary to state.

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[12] Californian ISO and London Economics, "A Proposed Methodology for Evaluating the Economic Benefits of Transmission Expansions in a Restructured Wholesale Electricity Market", February 28, 2003

There appears to be a clear cut case for more investment in interconnections in the NEM in the immediate future, but in the longer term, over-investment in transmission becomes a very expensive way to control generator market power, when much cheaper and more direct measures are available.

Indeed Bardak would argue that the "optimum" level of transmission investment cannot be precisely determined until all measures to control market power and price spikes via changes in the pool structure and rules are completed. Only when Australia has a workably competitive wholesale sector can the truly economic amount of transmission augmentation be calculated.

In the recent Bardak paper (Ref 1), the comment is made that:

> "The theoretical underpinning of the design of the present NEM trading system relies upon the key assumption that there is a sufficient number of independent generators operating in the mandatory pool to deliver workably competitive outcomes.
>
> In the NEM at present, Bardak can count only 16 independent owners of significant generation capacity — clearly not enough to sustain workably competitive conditions — especially when interconnections are often constrained. For example, the original UK pool had 38 participants the day it closed down and this level of competition was insufficient to avoid manipulation of the common pool price.
>
> It would be nice to think that the NSW and Queensland Governments would agree to desegregate their State-owned generators into competing, separate independent power stations, free of political controls. But this is simply fanciful at the present time, given the public aversion to privatisation and the potential instability inherent in the NEM (which persuades State Governments to maintain a degree of control in order to protect their consumers from unjustified prices).
>
> Stronger interconnections will also assist, by forcing all the generators to compete in the same pool, but this will take many years to achieve.
>
> ***It is extremely doubtful that, even were these developments to take place, the Australian NEM would exhibit enough competitive pressure to allow the compulsory pool to work properly.***
>
> The proper solution, and one adopted in several countries overseas, is to change the fundamental design of the NEM trading system to allow workably competitive conditions to apply with a small number of generators, supplemented by proper regulatory controls over remnant market power and adequate monitoring of market performance. In essence, the present NEM trading system is far too prone to price manipulation and instability, causing unnecessary price spikes and volatility, both of which greatly increase the risk of operating in the NEM.
>
> This should come as no surprise, as it has been the experience of all regions of the world that have tried to operate with a single-priced compulsory pool market. Chile and the United Kingdom were first to try the system, followed by

Australia, New Zealand (partly), California, Alberta, Ontario and Brazil (partly). All bar Australia have been forced to make changes to the system to control excessive prices and/or volatility.

In the United Kingdom, the NETA program replaced the original pool design with one based on bilateral, physical contracts at freely negotiated prices, supplemented by commercial power exchanges to allow the adjustment of contractual positions, and a compulsory balancing market. The latter carries only 2-3% of traded energy and is akin to the frequency control ancillary service markets in the NEM.[13]

Since they made this change, the results have been quite spectacular. In their 2002 Annual Report, OFGEM state that:

> "NETA has performed far better against the objectives originally set than anyone could have reasonably expected. Wholesale electricity prices are now 40 per cent lower than they were when reform started and most electricity is now traded like any other commodity. The demand-side is playing an increasing part in setting prices, the trading exchanges are functioning well and liquidity is increasing."

Australia will have to face up to making a similar change to the NEM trading system, if we are to halt the adverse trends which this paper highlights."

We can only repeat these comments in this submission.

As unpopular as it may be to the present NEM bureaucracy, Bardak continues to believe than until we make fundamental changes in the pool structure and rules, Australia will not achieve the workably competitive NEM that consumers have been promised for so many years.

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[13] See Brown, S, "England & Wales wholesale market –2 years on", presented at the OFGEM Seminar, 2nd June 2003, and available from www.ofgem.gov.uk, for the latest update on NETA.