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We're told a competitive price should reflect marginal cost. But applying this can be harder than it sounds, particularly in industries such as electricity. How do we make sure Mums & Dads can always afford their power, while also ensuring that the incentives are right for investment? It's easy (theoretically at least): you set the Goldilocks price. Not too high, not too low, but just right. But how do you know whether a market is delivering the "right" price, or in fact has a market power problem?

the state of COMPETITION

Market power and Goldilocks pricing in the National Electricity Market

An unknown 16 year old Chinese swimmer smashes Stephanie Rice's world record with an "impossible" swim at the London Olympics, her last lap faster than the male gold medallist. "No smoke without fire" say the spectators in the stands. But if Ye Shiwen hasn't failed any drug tests, will those watching be satisfied that her success is all due to her natural talent and hard work? What could dispell the doubt?

With the Olympics out of the way and the footy finals looming, we at *The State of Competition* have taken a break from sport by looking at the latest chapter in the equally contentious (although perhaps less followed) debate about generator market power. The Australian Energy Market Commission (AEMC) has just deferred until April 2013 its final determination on changes to the rules of the National Electricity Market (NEM) to deal with generator market power. The decision was to have been released on 30 August.

The notion that electricity markets are susceptible to market power has been around ever since electricity markets were liberalised in the late '80s and early '90s. Look no further than the first page of the 2009 report by Stanford University Professor Frank Wolak for the New Zealand Commerce Commission:

There is evidence from virtually every wholesale electricity market operating around the world consistent with some or all of the suppliers having the ability to exercise unilateral market power

The AEMC process has been running since November 2010 and, whatever the final decision, it is unlikely to end a debate in which positions are taken as an article of faith, unshakable regardless of the evidence.

Background to the NEM

The NEM was created in 1998. Retailers selling power drawn from the national grid, as well as generators supplying power into the grid, must trade through a "pool" operated by the Australian Energy Market Operator.

Generators bid their output into the pool and the market operator matches supply to demand, dispatching generation plant based on these bids using an algorithm that aims to achieve the least cost solution to meet demand every 5 minutes. From this, a spot price is determined for each of the five NEM geographic regions every half hour.

The spot price can vary from the market floor of -\$1,000 per megawatt hour (MWh) – which essentially means generators are paying to supply retailers – up

**Proving a negative:
what evidence would
demonstrate an absence
of generator market
power in the NEM?**



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Putting the microscope on electricity prices

to a cap of \$12,500/MWh. A safety net mechanism operates in the event of sustained spot prices above a specific level. This triggers an administered cap of \$300/MWh on the spot price until the sustained high prices fall away.

Managing the risks that come with trading through the pool is a significant feature of the NEM. For example, generators and retailers typically use a range of complex financial hedging contracts to manage spot price risk and smooth out some of the volatility of pool prices.

The spot price also has to drive investment in capacity to meet peak demand and growth in consumption. This is because the NEM is a “gross pool” market (ie all energy must be traded through the pool) and an “energy-only” market (so, unlike markets where generators receive separate payments for availability or capacity, NEM generators only receive payment for output supplied into the pool).

The NEM rules do not directly address the exercise of market power by market participants in their bidding activities; the rules merely require bids to be made in good faith (clause 3.8.22A). Any alleged misuses of market power fall to be dealt with under section 46 of the *Competition and Consumer Act 2010*.

Who's who in NEM's zoo

The NEM loves a good acronym.

Here's a run down of some key players:

AEMC (Australian Energy Market Commission) - the maker of the National Electricity Rules

AER (Australian Energy Regulator) - the party charged with enforcing the Rules

AEMO (Australian Energy Market Operator) - the operator of the NEM pool

NGF (National Generators Forum) - an industry association representing government and privately-owned generators

MEU (Major Energy Users Inc) - an industry group representing some large electricity users

Houston: we have a (market power) problem

In November 2010, the Major Energy Users Inc (**MEU**) submitted a rule change request regarding the potential exercise of market power by generators in the NEM. The MEU represents a group of large energy users who are concerned about price spikes.

The MEU proposed that the Australian Energy Regulator (**AER**) declare “dominant” generators in each NEM region. If the maximum regional demand at any time cannot be met without the plant of a particular generator, then that generator would be considered “dominant” because it would have the ability to manipulate the spot price by withholding its capacity.

Under the proposed rule change, when regional demand exceeded the level at which a generator was declared to be “dominant”, the generator would then be required to offer all of its available capacity at a bid price capped at \$300/MWh.

The MEU rule change is based on the fundamental idea that generators should bid at short run marginal cost. This comes back to the theoretical view underpinning the work of economists such as Professor Wolak.

In his 2009 New Zealand report, Professor Wolak argued that the relevant competitive benchmark for spot prices in an energy-only electricity market should be based on assuming generators behave as *price-takers*. Effectively that means assuming that each generator should behave as if it were redundant to market need.

In daily pricing decisions, the only choice for such a generator in a particular half hour would be to produce or switch off; and they would be better off producing as long as the price they receive exceeded their short run marginal cost. The “competitive price” under this model is therefore determined by the short run marginal cost of the last generator called on to meet demand in any period.

Professor Wolak acknowledged this “competitive price” could be below the price that is necessary to finance investment in new generation capacity, or indeed the price needed to maintain the long-term financial viability of the industry. By definition, this price will be below the total cost of the generator whose short run marginal cost sets the market price.

The early economic work on liberalised electricity markets saw bidding above short run marginal cost as an exercise of market power, but acknowledged that this was a form of *temporary* market power and, as such, more would be needed to assess whether there was an actual market problem.

So are departures from SRMC an exercise of market power?

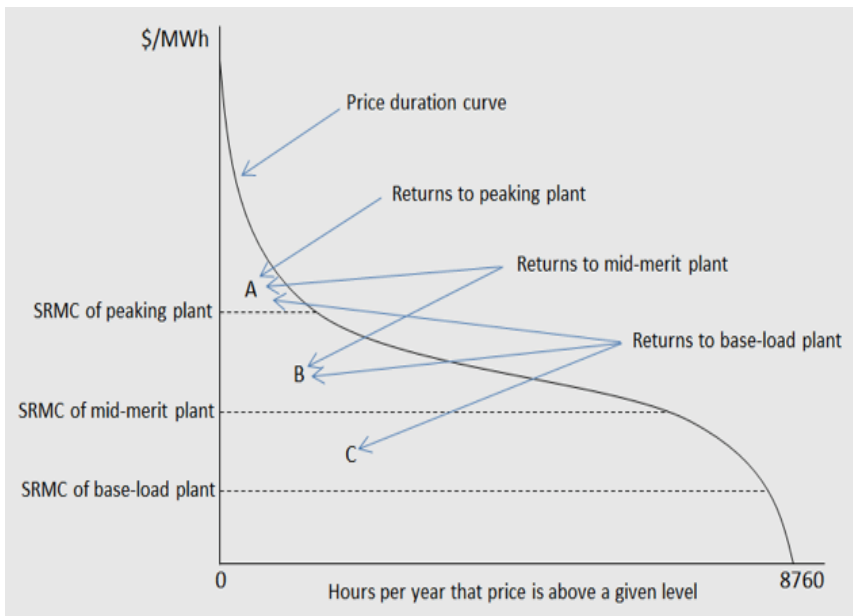
If the theory is that generators should bid at short run marginal cost, then why allow a market price cap of \$12,500/MWh (or indeed a negative floor)? Why have a structure that allows spot prices to have such highs and lows?

The reason was articulated by the AEMC in two 2009 processes, one a rule change increasing the market price cap to its present level of \$12,500 and the other a review of energy market frameworks in light of climate change policies. It relates to a “missing money” issue that arises if market prices are capped at a level which is too low for firms to recover total costs.

An efficient mix of generation typically involves plant with varying cost structures, both in terms of fixed costs and operating costs. Generators talk about the “price duration curve” (see next page), essentially a graph that plots how many hours in a year the spot price is above a given level. Whenever the price is above the operating costs of a particular generator, that generator will be able to contribute to its fixed costs. The price duration curve indicates what mix of plant is most economic given the underlying profile of demand and whether returns will be sufficient to cover total costs.

As the AEMC concluded in 2009, it's a question of getting the balance right – ensuring there is just enough money for all generating plant needed to meet reliability standards (essentially an acceptable level of spare capacity to cover unexpected plant failure or demand spikes, heatwaves etc) but not necessarily any more than this. Is the NEM framework resilient enough to get this right? The AEMC concluded in 2009 that it was.

Prices need to reflect the right balance: enough for investors, not too much for consumers



The price duration curve (source: AEMC draft determination)

Okay the framework is sound, but do we have a market power problem?

In September 2011, the AEMC published its proposed definition of market power in the context of the NEM, being:

the ability of a generator to increase annual average wholesale prices to a level that exceeds long-run marginal cost... and sustain prices at that level due to the presence of significant barriers to entry.

The AEMC explained that, to apply this definition, it is necessary to look at both spot *and* contract prices; further, high prices need to be sustained for long enough that new entry would be expected to occur assuming no significant barriers to entry.

Conceptually, this approach is consistent with competition case law and theory, in particular the emphasis of the High Court upon barriers to entry being an essential pre-requisite for market power. It also avoids the “missing money” problem associated with using short run marginal cost to benchmark assessments of the competitive price.

The AEMC used this definition in order to consider the proposed rule change mentioned earlier. It engaged NERA Economic Consulting / Oakley Greenwood (NERA) to estimate long run marginal cost in the NEM and assess whether there was any evidence of wholesale prices being sustained at a level above this estimate.

The AEMC was not looking for the NERA analysis to be a bright line test. Rather, if the assessment were to show prices persistently above long run marginal cost, that would warrant further investigation because there yet may be legitimate reasons for this. Similarly, evidence of sustained prices below this estimate would not necessarily indicate anti-competitive behaviour (such as predatory pricing) as it could also be due to legitimate reasons. On the other hand, if pricing *were* around this benchmark, then we can be reasonably confident that we have a market operating competitively.

The use of long run marginal cost as a benchmark is not novel

or unique. The current Chief Justice of the High Court, Justice Robert French, had to consider the issue of generator market power in the 2003 merger case, *AGL v ACCC*. He looked at average prices against a long run marginal cost benchmark as part of an overall picture when considering the significance of particular high price events in Victoria in the summer of 2000/2001.

The New Zealand Ministry of Economic Development, responding to the Commerce Commission’s 2009 electricity investigation, also suggested that comparing average wholesale spot prices with the cost of new capacity or long run marginal cost would be useful when inquiring whether there was sustained market power.

Similarly, in the 2005-2007 European Commission energy sector inquiry, a model of efficient new entrant cost was used to assess how wholesale electricity prices contributed to fixed costs, in particular whether they would be sufficient to sustain investment in efficient new plant.

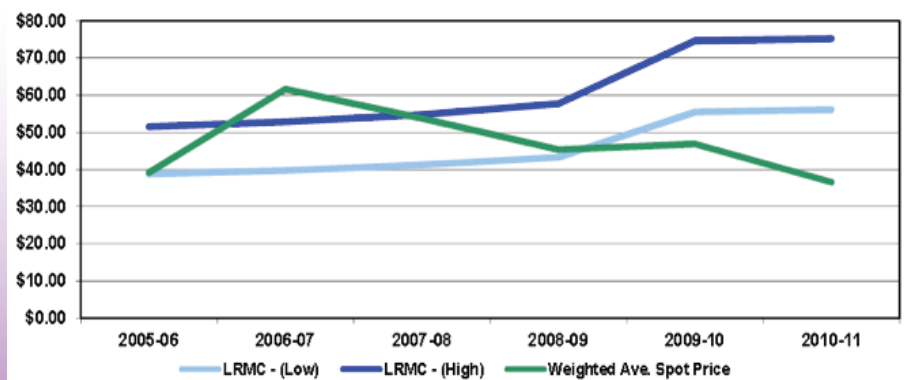
NERA looked at every NEM region except Tasmania (as the rule change was not proposed to apply to Tasmania due to its unique features) for the period 2005/06 through to 2010/11. NERA concluded that there was no evidence of generator market power in the regions it assessed or in the NEM as a whole. While average prices had in each region occasionally risen above long run marginal cost, NERA observed that this had not been sustained in the region (or the NEM as a whole), and in recent years average prices have fallen well below this level.

The initial view: no evidence of a problem

On 7 June 2012, the AEMC published its draft determination saying no rule change was needed, on the basis that there was insufficient evidence that an actual generator market power problem existed.

Key findings from the draft determination were:

- Spot prices can be volatile at times. What matters to consumers is the level of prices over the longer term rather than in any short term period.
- Prices have occasionally risen above long run marginal cost estimates, but they have also been below this level in a number of years. The periods of high prices were not sustained for long enough to support claims of a substantial market power problem.
- Consistent trends across multiple regions strongly support the existence of external factors influencing prices rather than pointing to generator behaviour.



Estimates of long run marginal cost in the NEM (source: NERA report to AEMC)

- There may be a range of reasons why average annual prices have on occasion been above (or below) long term efficient levels in different regions.
- Variations in average prices are to be expected over time and the results of NERA's analysis are consistent with a well-functioning market.

In accordance with its approach in 2009, the AEMC's draft determination placed great importance on investment signals:

The MEU's proposed rule would pose unacceptable limitations on the ability of NEM generators to recover their efficient costs. In the long-term, a generator must have an expectation that it will likely be able to recover its efficient costs, both for that generator to remain solvent and to encourage further investment and injections of capital to the NEM. A market design that does not provide a generator with a reasonable opportunity to recover its efficient costs will fail in attracting the necessary investment to maintain supply availability in line with the growth in demand.

The MEU was disappointed with the draft decision, claiming that the AEMC had adopted a framework that "defined away" the issue of price spikes.

It considered that the AEMC was effectively validating the exercise of temporary market power by generators as long as outcomes were not so severe as to significantly increase electricity prices over a longer period. The MEU quoted from the peer review of the NERA work by Professors Stephen King and Joshua Gans, who referred to: "the fact that in some periods many generators may have temporary market power even though they clearly lack sustained, substantial market power".

The MEU has some support from the AER. Its position was that price spikes are acceptable if they reflect scarcity pricing (eg at times of high demand) but not where they reflect "economic withholding" (the concept that there is available plant with a short run marginal cost below the market price being withheld for profit maximising reasons).

But trying to create a distinction between a "normal" price spike and an anti-competitive one is fraught with danger. It imposes a norm of commercial behaviour that goes back to the "fire sale" assumption of an absolute price taker and it ignores broader considerations in real world commercial decision making.

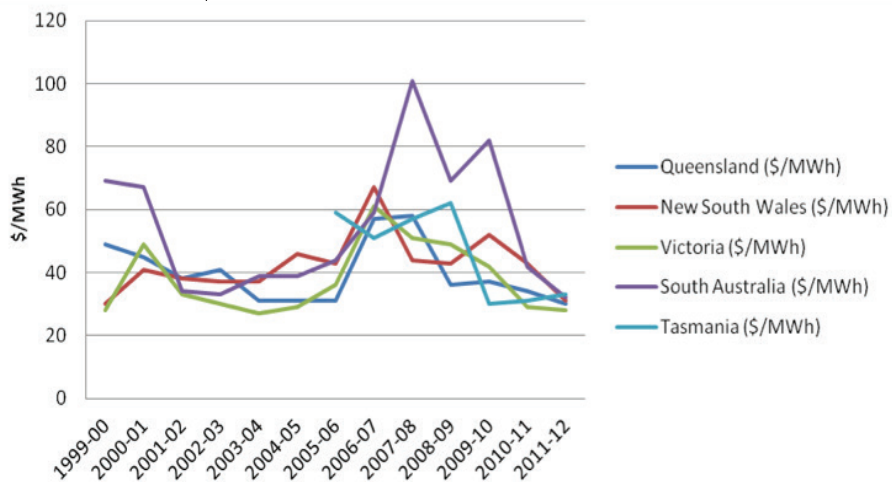
We might think we know what we're seeing but things are not always as they seem. In *AGL v ACCC* it emerged that what had been widely characterised as economic withholding in the summer of 2000/2001 was actually a last ditch attempt to avoid defaulting on financing facilities following an extended period of low market prices.

Getting the balance right over the long term

The MEU is correct that the AEMC defined away the issue of temporary market power by looking at long run marginal cost – but that was the AEMC's point. It is understandable that major electricity users want supply at short run marginal cost. Who wouldn't? But what if that impacts on investment and reliability of supply?

The National Generators Forum (NGF) in its response to the AEMC draft determination pointed out that wholesale prices have remained *at or well below* new entrant levels, apart from a period dominated by severe drought conditions. Low wholesale electricity prices in the past few years have in fact offset retail price increases, not contributed to those increases.

The NGF provided the chart below showing that price outcomes in all regions for the past financial year were the lowest ever recorded (in real terms) and substantially below the NERA long run marginal cost estimates for 2010-11.



NEM volume-weighted spot prices 1999/00 - 2011/12 (source: NGF submission to AEMC)

The NGF's point is clear. But equally obvious is the AER's concern with South Australia. As the AER has pointed out, the South Australian prices for 2007-08, 2008-09 and 2009-10 were the 3 highest in any NEM region ever. Evidence of a problem or is the subsequent drop in prices evidence that the market resolved itself? Is it all in the eye of the beholder? Well, not quite.

Can the National Electricity Objective settle the debate?

Back in 2005 the National Electricity Objective (NEO) was introduced into the National Electricity Law. Consequently, when assessing rule changes, the AEMC has to be satisfied that the proposed rule is likely to contribute to the achievement of the NEO, which intentionally emphasises the "long term interests of consumers" and refers to both price and reliability of supply.

The NEO mirrors the objective in Part XIC of the *Competition and Consumer Act 2010* (the telecommunications access regime), which also bears some similarity to the criteria set out in the general access provisions of Part IIIA. The Australian Competition Tribunal in 2007 and again in 2010 provided some guidance on the concept of the *long term interests of consumers* ("end-users") in the context of discussing an access price for telecommunications services.

The Tribunal explained that the long term interests of consumers is met at the point at which there is alignment between efficient investment on the supply side and efficient use and downstream investment on the demand side.

This point is where pricing recovers the costs of efficient investment, including a normal return. That mimics the theo-

retical price in a competitive market and meets the legitimate interests of both seller and buyer, as neither is entitled to expect a price higher or lower than this competitive level. The Tribunal also made the point that it is in the long term interests of consumers that efficient suppliers survive the process of competition.

Conclusion

The AEMC has said the responses to the draft determination raise the need for more analysis and modelling, and it will consult with stakeholders further. Nonetheless, in its consideration of the MEU proposal to date, the AEMC has established some important points of principle in approaching the issue of generator market power. Thus far:

- The AEMC has rejected a *short run* approach in favour of a *long run* perspective, recognising that price outcomes below what is needed to recover the efficient costs of investment in generation are not in the *long term interests of consumers*.
- It has dismissed the notion that temporary price spikes are automatically cause for concern and recognised the need to take into account both spot and contract prices.
- It has also reinforced the need to focus on barriers to entry, consistent with the approach under general competition law. Further, the AEMC process has raised some areas for thought in the broader competition law context.

For example, this debate throws up the lack of tools for distinguishing between the way “normal” competition works in a particular industry, and behaviour that makes an industry less competitive than it ought to be.

It reveals the lack of consensus in assessing price cycles or markets where there is inherent volatility. What is the appropriate measure of price to compare to costs; is there any relevance in prices at a given point?

Finally, it invites us to think about the formulation of objectives like the NEO. If we wanted the NEM to ensure users receive the cheapest possible electricity (even if this reduced reliability), then the NEO ought to have made that clear.

There is a sense that the AEMC process – as detailed as it has been, and no matter how much more modelling is done – will not shift anyone’s view.

Everyone wants reliable electricity supply, yet the generator market power debate raises the question of whether there is an ingrained perception of electricity as a public good that we don’t really expect to pay for other than through our taxes, much like roads. But that’s something that was given up at the point of liberalising electricity markets when we discarded the old model of integrated monopoly power authorities: when you look to markets to deliver investment, you need to provide the right incentives.

Stay tuned for the next chapter in the story... If you’re wanting to follow developments closely, the AEMC plans to release a further paper for consultation before year’s end, providing yet another opportunity for parties to make submissions.

Rachel and Alexandra (and Rhonda) have represented clients across the spectrum of NEM participants, including users, generators and regulators. As with all issues of The State of Competition, however, the views expressed here are entirely our own.

About the authors



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Both Rachel and Alexandra are Australian Legal Practitioners within the meaning of the Legal Profession Act 2004 (Vic), with liability limited by a scheme approved under Professional Standards Legislation.

Further reading

Where to start?

- Here’s the AEMC’s page concerning the proposed rule change, which includes links to the draft determination, supporting reports and all submissions: <http://aemc.gov.au/Electricity/Rule-changes/Open/potential-generator-market-power-in-the-nem.html>
- For other documents referred to in this article, as well as some additional material of interest, please look at: <http://thestateofcompetition.com.au/links/> (see *What we’re reading now...*)

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