

MARKET POWER IN THE WHOLESALE ELECTRICITY MARKET

Thank you for the opportunity to talk to you today.

The Economic Regulation Authority (**ERA**) has a range of functions in the Wholesale Electricity Market (**WEM**), but the relevant one for today is market power monitoring and mitigation in the WEM. The ERA and the Australian Energy Market Operator (**AEMO**) have major roles in this function.

By way of background, the ERA is currently a two person board, which is the decision maker in our organisation. Public servants like myself in the ERA's Secretariat support the ERA by undertaking the research and analysis it requires to make decisions.

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Today, as context for market power mitigation in the WEM, I'd like to provide a tour of general market power mitigation and monitoring under Australian competition law and in electricity markets. I don't intend to cover our Electricity Generation and Retail Corporation regulation of Synergy in this talk.

I'm concentrating on the WEM's Balancing Market because it is very important that this market be as competitive as possible. The Balancing Market is where the efficiency of the WEM's dispatch is set, that is to ensure the lowest cost generators to service any load are dispatched.

Additionally, while a bilateral contract may offer more than a Balancing Market transaction for both buyer and seller, the fall-back option to buy from or sell to the Balancing Market is there and this places at least some gravity on what both parties in the bilateral market can do.

A couple of warnings to start: I'm going to talk about the rationale behind regulation of wholesale electricity markets above and beyond general consumer and competition law. However, just as you should never ask a barber whether you need a haircut, you should never ask a regulator the value of more regulation. I intend to stick to explaining rather than promoting, but if I do falter you've been warned.

Secondly, I'm going to touch on some Australian competition law concepts and precedents. My only comment is if you're relying on an economist for your legal advice, then you may be in some trouble, so please seek your own. Additionally, I can only cover some of the issues in 20 minutes, so you won't get a complete guide today.

Having said this, last year the ERA completed its first investigation into a market participant under the WEM's primary market power mitigation rule - that is Market Rule 7a.2.17. While I don't intend to discuss that case here, the ERA believes that, given the lessons we learned, there is value in providing some guidance to the market on how we intend to perform our functions in the future.

I would caution, however, that the recent investigation has not yet been considered by the Electricity Review Board (**ERB**). Consequently it is possible that the ERA's thoughts may not be consistent with those of the ERB.

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Today I'd like to cover:

- a brief summary of Australian competition law concepts;

- examine why electricity markets tend to have market power mitigation measures over and above general competition law;
- a very brief summary of United States (**US**) electricity markets;
- how the ERA views the major market-power mitigation rule in the WEM; and
- if time allows I'll also touch on market power in capacity markets, as this may become an issue under the EMR's proposed changes.

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With regard to Australian competition law, there are two major sections of the Competition And Consumer Act 2010 (**CCA**) that relate to market power in competitive or non-natural monopoly markets. These are section 46, which relates to misuse of market power, and section 50 which relates to whether mergers substantially lessen competition.

There are other sections on anti-competitive behaviour, such as those on collusion, but section 46 and section 50 are the big two that share similar concepts to Rule 7A.2.17.

I don't include the merger rule because of anything that has happened in the WEM – instead I do so because 'substantially lessening competition' shares many concepts with misuse of market power, such as market definition and the definition of market power itself. Additionally, the one big Australian competition law precedent in the electricity industry is from when the Australian Competition and Consumer Commission (**ACCC**) opposed AGL's takeover over the Loy Yang power stations in Victoria in 2003 (**AGL v ACC**).

Very quickly, and very superficially, for a firm to be in trouble under section 46 of the CCA it must have taken advantage of its substantial market power for a prohibited purpose.

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In terms of what is a prohibited purpose, the CCA is primarily concerned with pricing too low so as to, for example, drive other firms out of business. In other words, it is more concerned with protecting competition. This is an interesting contrast to many electricity market regulations which attempt to limit participants exercising market power by increasing prices above competitive levels.

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The first hurdle under section 46 of the CCA is that a firm must possess substantial market power, and I'll stress that the word 'substantial' is very important.

Courts have explicitly outlined that substantial market power is the ability to raise prices without constraint from competition. Equally as explicitly, courts have included the potential long-run supply response from new competitors as a constraint to firms pricing under the CCA.

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Courts have acknowledged that short-term or transient market power can exist, but that it is not 'substantial'.

For example, in *AGL v ACCC*, Justice French found that Loy yang, through a set of fortuitous circumstances, had market power in the summer of 2000/01 and that it used that market power to manipulate prices. However, he also found that this was not substantial market power as relevant to the CCA because new generation capacity was announced in response to the high prices.

A period of two years was discussed in this case as the time in which gas turbines could be commissioned into the National Electricity Market (**NEM**). This leads to the implication that, as far as the CCA is concerned, a market participant has two years to make hay while the sun shines.

While not definitive, courts have examined firms' Long-Run Marginal Cost (**LRMC**) to see whether they have substantial market power. That is, to have substantial market power firms must be able to price sustainably above the cost of a new entrant.

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The second hurdle under section 46 of the CCA is that a market participant must take advantage of its substantial market power.

Firms are allowed to compete and competition can be brutal and reduce the number of competitors in a market. Courts have found that section 46 is only invoked if the firm in question does something that it could not profitably have done if it did not have market power.

Evidencing 'take advantage of' has been difficult for the ACCC and this is behind the push for the so-called effects test recommended in The Harper Review of Competition Policy. I don't intend to get into this argument here.

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OK, so to electricity markets. It is generally accepted that electricity markets are more prone to market power abuse than other markets and that the cost of this potential abuse can be very high. This is because:

- short-run demand is very insensitive to prices and most consumers don't have access to real time prices on which to base any purchasing decision.
- additionally, demand and supply must always be equal at every moment. Most consumers don't have the option of coming back tomorrow when the price is cheaper.
- the short-run damage from the exploitation of market power can be substantial and can have important long-run consequences.

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As I like to occasionally remind my colleagues, the entire California electricity crisis in 2000/01 lasted for a total of 17 months, well within the two year window mentioned in AGL v ACCC.

Aside from the more well-known costs of blackouts and retailer bankruptcies, the Californian State Government became involved and increased wholesale supply by entering into expensive long-term contracts with generators. However, with the benefit of hindsight we know that there was never a shortage of supply, only misuse of market power to the extreme.

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Finally, in response to the factors I've just mentioned, many electricity markets, including the WEM, have a separate capacity market¹ which explicitly aims to reduce price volatility and exploitation of market power.

¹ In a 'capacity' market, generators receive two payments – one for fixed costs (a capacity payment, denoted in the WEM as dollars per Megawatt capacity per annum) and one for short-run or variable costs (energy price, denoted in dollars per Megawatt hour). In an 'energy-only' market, generators receive only one payment (energy price) that covers both its fixed and variable costs.

There is an argument that it's OK for generators to play a little bit and offer above short-run costs in an energy-only market because energy prices must cover generators' capital and operating costs. No such argument exists for a market with a separate capacity market like the WEM.

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Very quickly I'd like to consider how US wholesale markets attempt to constrain market power. I mainly refer to dual energy/capacity markets, but note that even energy-only markets have some market-power mitigation rules.

Broadly speaking, there are two methods employed by US capacity markets. Firstly, structural restrictions such as PJM's Three Pivotal Supplier (**TPS**) test, which examines the ability of PJM's nodes to meet demand without each node's largest suppliers, consider whether a participant has market power. If the participant does have market power, then it is restricted to reference or cost-based offers, usually with a slight margin for error.

As an aside, if the WEM was a node of PJM my best estimate is that everybody would 'fail' the TPS test and be restricted to cost-based offers.

Secondly, conduct and impact tests place a limit on the offers generators may place into each market. These are often reasonably large premiums above a generator's costs (\$100 or 25% in NYISO), but these become much tighter if a node in the system is partially isolated due to transmission constraints (e.g. New York City).

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Turning to the WEM, the major market-power mitigation rule is 7a.2.17. It states that:

A market participant must not, for any trading interval, offer prices in its balancing submission in excess of the market participant's reasonable expectation of the short run marginal cost of generating the relevant electricity by the balancing facility, when such behaviour relates to market power.

There are at least four phrases in this rule that require some sort of definition or interpretation, but those that originally wrote the rules decided not to give those that followed any further guidance.

Due to time constraints I'm only going to cover a couple of the key ones today.

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When interpreting Rule 7a.2.17, I have already mentioned the CCA. While terms such as 'market' and 'market power' have been interpreted by courts for the purposes of applying the CCA, the similarity of the terms has some implications for how we interpret Rule 7a.2.17.

Secondly, we look to the Western Australian Interpretation Act. This Act gives guidance that in interpreting clauses in legislation, the purpose of those clauses should be considered.

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Finally, the touchstone for all of the ERA's activities in the WEM is the Market Objectives. There are five, but for simplicity I'd like to focus on just two with respect to rule 7a.2.17.

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The ERA Secretariat is comprised of economists, and as you know economists are obsessed by the concept of economic efficiency. I won't go into it in detail, but generally speaking economic efficiency is affected if quantities move due to use of market power or from policy or rule changes.

If quantities don't move but money changes hands, then that's a transfer that doesn't affect efficiency. The market objectives clearly state that economic efficiency is important, while if there is a transfer it goes, in the long run, to consumers.

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With respect to defining market power, I make the following points in examining Rule 7a.2.17:

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- unlike the CCA 2010 there is no express requirement in Rule 7a.2.17 for the market power to be significant or sustained;
- the rule as written is capable of applying to any single trading interval;
- the rule refers to Short-Run Marginal Cost (**SRMC**), compared to CCA cases where LRMC is frequently considered as a measure of substantial market power;
- defining market power in rule 7a.2.17 as substantial would effectively render the rule toothless, leading to economic efficiency losses and/or transfers from consumers to producers, which the ERA believes is not the intent of the rule; and
- many energy/capacity markets around the world have similar market power clauses that apply to any market power.

When taken together, these factors lead ERA to monitor for market power that does not have to be substantial. It is watching for substantial plus temporary or transitory market power.

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SRMC – I first learned about this concept sometime in the mid-1980s at high school and have used it many times since, but I can honestly say that the economics of thermal electricity generation has made me think more about it and its application in the past year than I have in total over the last 30 years.

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Here is the standard economics textbook diagram of how a profit maximising firm acts. Don't worry if you haven't seen this before, the important point is that a firm setting its product price equal to the SRMC of producing its last unit of production is the economically efficient outcome.

The problem is, in every one of these diagrams I've ever seen in economics textbooks the SRMC curve slopes upwards and exceeds the firm's average variable cost. As you are all aware, in electricity generation this isn't the case at all.

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The efficiency of thermal generators generally improves as production increases, meaning their SRMC curves slopes downwards. This causes two problems.

Firstly, it makes it hard to construct successive offer tranches that increase in price, which you must do or else AEMO will try to dispatch your final tranche before your minimum generation.

Secondly, it means that a generator's SRMC will often be less than its Average Variable Cost (**AVC**). That is, submitting a price equal to the strict economic definition of SRMC will lead to an economic loss² in the Balancing Market, and that is before you even start considering start-up and shutdown costs.

The ERA considers that forcing generators into an economic loss in the Balancing Market is not consistent with the market objectives and so we are understanding of this when examining participants' behaviours.

The Americans, by the way, get around this by using a two or three part pricing system, similar to the fixed and variable charges a regulator might set for a monopoly. This is what is happening when you hear the terms no-load cost, make-whole-cost or bid cost recovery. These have no physical meaning, but are a mathematical construct so that generators can consistently price using an upward-sloping SRMC curve and still recover costs.

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In the absence of such pricing, there are potentially two ways to deal with this problem. The first is that we could give a little ground on the definition of SRMC to something more like what we economists would call AVC. I would speculate that this is the method that market participants have been doing up until now.

Under this definition a market participant could not price above its SRMC in a profitable fashion unless it had market power. Hence it must be related to market power.

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The other way is to keep the definition of SRMC intact, but say that offering prices above SRMC but no greater than AVC, to recover costs is not related to market power because that is exactly what a generator with no market power would do.

The important thing is that both of these methods leads you to exactly the same outcome. While I can't be definitive at this stage the ERA appreciates the need for participants to operate in the market in a practical and profitable fashion.

Rule 7a.2.17 is specified very tightly to cover theoretically small deviations from the rule for very short periods of time. Consequently we apply common sense on a case-by-case basis with regard to scale, time and other factors such as how bilateral contracts might affect incentives for market participants.

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Finally, the recent Capacity Market Position Paper recommends shifting to a steeper demand curve for the transition period and eventually the auction. The ERA is supportive of a system that more accurately reflects the value of additional capacity at any level of supply.

² An economic loss occurs when the price received by a generator for a tranche of electricity does not cover the additional costs incurred in producing that tranche. The additional costs may include opportunity costs, but exclude costs that would be incurred regardless of whether the tranche was produced or not (e.g. take-or-pay contracts or fixed costs).

The downside of a steeper demand curve is, as the Position Paper notes, a small change in quantity can lead to a large change in the capacity price. Exercising market power in such a situation could be very profitable.

I don't know exactly how the new capacity market arrangements will work. Nevertheless, the US experience would indicate that this is a considerable task.

In conclusion, I hope that I've given you some idea of how the ERA approaches its role in market power monitoring in the WEM.

The EMR Wholesale Electricity Market Improvements Position Paper, released two days ago, recommends that more guidance be provided to market participants on how to operate in the WEM without triggering Rule 7a.2.17.

The ERA agrees that more guidance is needed, but I can't be completely specific today because there is not yet an ERB precedent for the application of rule 7a.2.17.

Once that precedent is available, and I can't give you a timeframe on that, we intend to inform market participants on its implications as to how we will undertake our market power monitoring duties.

Thank you for your time.

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