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Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2449
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Submitted via www.aemc.gov.au

12 February 2015

Dear Mr Pierce,

Submission on bidding in good faith options paper (ERC0166)

EnerNOC is grateful for the opportunity to comment further on this important rule change.

The analysis in the AEMC's options paper is clear and insightful, and the consultants' reports, especially those by Yarrow[1] and Oakley Greenwood[2], provide very helpful context.

We agree with the Commission that the issues raised are of fundamental importance to the functioning of the market.[3] They are particularly important **now** because other barriers to customer participation in the NEM are being removed, so there is the potential for significantly increased levels of participation.[4] However, this potential will not be realised if rebidding behaviour continues to undermine confidence in the integrity of the wholesale market. If customers believe that involvement in the wholesale market would expose them to unforecastable, unmanageable risks caused by the capricious actions of incumbent generators, they will remain disengaged.

1 This is not about short-term price effects

In our 22 May 2014 submission, we stated that we consider the knock-on effects of late strategic rebidding – including the discouragement of demand-side response – to be more serious than the more obvious direct effects.

1 Yarrow & Decker, *Bidding in energy-only wholesale markets*, November 2014.

2 Oakley Greenwood, *The impact of late rebidding on the provision of demand response by large electricity users in the NEM,* November 2014.

3 Options Paper, p. i.

4 As discussed at length in the Oakley Greenwood report.

We note that the Yarrow report spells out the economic reasons for these knock-on effects,[5] and that the Oakley Greenwood report confirms that we are not alone in this view.[6] The AEMO submission[7] ignores these more important issues.

We agree with the Commission's view that late strategic rebidding by some generators:[8]

- Inhibits the efficient functioning of the price discovery process by exploiting the inability of some generators **and all customers** to physically respond.
- Skews the market towards outcomes that are more favourable for those generators that are regularly dispatched, and against peaking resources **and responsive customers**.
- Encourages investment in more rapid responses to price spikes by fast-response generators **and customers** that may not represent an efficient outcome, because the price outcomes themselves are inefficient.

The phrases in bold were added by us, but are consistent with the Commission's analysis. Yarrow also describes the potential consequences:

> *"Perhaps the biggest risk of harm/inefficiency occurs from late re-bidding becoming a normal feature of a market. In such circumstances, anticipations that re-bidding is more likely to take prices up rather than down may create a risk that initial bids will come to reflect the lower responsiveness of market participants at the end of the re-bidding period, rather than the greater responsiveness at the beginning."*[9]

We also strongly agree with the Commission's conclusion, that:

> *"the design of the market framework should set reasonable boundaries on the ability of participants to influence price outcomes that are to the detriment of other participants and that are inconsistent with an efficient functioning market"*[10]

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5 "… this could, over the longer term, imply that less fast-response capacity became available to the system, which could in turn tend to increase the payoffs from very late re-bidding and to increase the frequency with which it occurred. … the incentive structure would continue to be 'tilted' against 'responsiveness' ..." – Yarrow, p. 15.

6 "The majority of organisations consulted consider that this bidding behaviour has further contributed to a reduction in the amount of demand response that is available" – Options Paper, p. 32.

7 AEMO, *NEM 5 minute dispatch and 30 minute settlement: price impacts from late rebids* , July 2014.

8 Paraphrasing of Options Paper, pp. 39-40.

9 Yarrow, pp. 18-19.

10 Options Paper, p. 40.

2 The lack of gate closure makes the NEM uniquely gameable

As stated in our previous submission, we are not aware of any other electricity market without some form of gate closure. The CEG study[11] is consistent with our experience, finding gate closure times of 45 minutes, 60 minutes, 65 minutes, 2 hours, and day-ahead – nothing shorter.

When we explain NEM dispatch arrangements to experts from other markets, they tend to react with incredulity: it seems obvious to them that a real-time market that lacks gate closure would be extremely gameable, and that the 5m/30m issue further amplifies the rewards for gaming and further discourages demand-side participation.

3 Behavioural rules alone will not suffice

The current compliance regime in the NEM does seem to be weak compared to those in other markets, and probably should be strengthened. However, we do not believe that even the most stringent of behavioural rules would suffice on their own to prevent late strategic rebidding.

This is because the current lack of gate closure, combined with the 5m/30m issue, makes such behaviour so rewarding that traders will doggedly and creatively test the boundaries of the rules and of the regulator's interpretation and tolerance. Australia does not have a tradition of firm regulation with vigorous enforcement – unlike, for example, the USA – so it seems unlikely that the regulator would prevail in such tests.

We are persuaded by the discussion in section 5.2 of the Options Paper that, even when the harm is absolutely clear, it is extremely difficult to prescribe and enforce a behavioural rule.[12] None of the options set out in section 5.3 seem promising:

- Option 1: We agree that a rebid based on an expectation that does not eventuate may be just as valid as one based on an observable change in market conditions, so relying on the provision of reasons for rebids seems a non-starter.
- Option 2: We agree that it would be very difficult to prove that a participant never intended to honour an earlier bid: it would only be practicable to do so in circumstances in which it could objectively be shown that it was impossible for them to honour it, and that the participant knew that.
- Option 3: Only disciplining participants for making bids that they did not intend to honour in any circumstances would catch nothing. It would also be extremely challenging to prove that the intentions of a generator are inconsistent with an efficiently functioning market. We also agree that late

[11] Competition Economists Group, *International review of rebidding activity and regulation*, December 2014.

[12] Options Paper, p. 48.

rebidding can cause inefficient price outcomes irrespective of the intentions of the generator doing the rebidding.

On this basis, we do not see behavioural rules as a potential panacea. It may make sense to reform them, but they will not solve the problem at hand.

4 Benefits of gate closure

The Options Paper spells out the benefits of gate closure very clearly:

> *"With a gate closure, end users would be less exposed to high prices caused by late rebids towards the end of trading intervals for energy already consumed over the half hour. The prevention of late rebids might also mean that peaking generators would have time to start-up and generate to acquire market revenue, allowing them to meet their payment obligations under cap contracts. This could act to increase competition in the contract market, lowering prices to consumers and resulting in more efficient investment."*[13]

These benefits seem substantial, and suggest that gate closure should be introduced unless the potential harm from gate closure seems likely to outweigh them.

5 Potential harm from gate closure

5.1 Gate closure has little effect on iterative price discovery

We agree that the iterative process of price discovery is important, and that gate closure will reduce the time available for it. However, it is important to note that the iterative process of price discovery starts at 12:30 the day before delivery. This means that iteration can take place for between 15 and 39 hours, with feedback from predispatch every 30 minutes.[14] Removing, say, an hour from this period will not meaningfully reduce the number of iterations.

5.2 Gate closure could affect dispatch of fast-start plant, but not much

The potential harm from gate closure comes not from reducing the amount of iteration but from requiring participants to look slightly further into the future when making their final bids.

This could have two types of impact:

1. Those that could result in different physical dispatch outcomes, and hence affect costs and the productive efficiency of dispatch.

[13] Options Paper, p. 73.

[14] AEMO, *Pre-dispatch process description*, Version 3.1, July 2010, p. 12.

2. Those that only affect price outcomes, due to the supply curve being "based on out-of-date assessments of the level of economic rents."[15]

We consider the first type of impact to be far more important. The second type of impact is merely a wealth transfer between generators and consumers, and it seems unlikely that many consumers would be upset by the prospect of marginally less effective extraction of economic rent.[16]

Most scheduled generators (baseload, mid-merit, and some peakers) take several hours to start, so their unit commitment decisions have to be locked in well in advance of delivery. Their unit commitment decisions will hence be unaffected by gate closure, unless the gate closes several hours before delivery. In addition, such generators typically have quite slow ramp rates, so even dramatic rebids close to the time of delivery cannot greatly affect dispatched generation levels.

It is the fast-start peaking units which could be more seriously affected, because they will have less ability to control how AEMO dispatches them. Many of them use the Fast-Start Inflexibility Profile (FSIP)[17], but there are two circumstances in which relatively late rebids can be helpful to them:

1. Self-committing in anticipation of high prices, so that the generator can be generating at the desired level of output when the high prices arrive.

2. Rejecting a dispatch instruction when the generator considers it unlikely that high prices will persist for long enough for it to be profitable to respond.

With gate closure, fast-start generators would still be able to do the first of these, but they would have to do so further in advance of delivery, and hence rely on price forecasts looking a little further into the future. This would normally mean that the forecasts could be expected to be less accurate. However, the main effect of gate closure is to make prices much easier to forecast: in the absence of late rebids, changes in price should result only from changes in the balance of supply and demand – something which is much easier to forecast than other generators' bidding behaviour. So, although fast-start generators will have to look further into the future when attempting to anticipate high price periods, their price forecasts should be significantly more reliable, so it seems likely that their decisions should not be much – if at all – worse than they are in the absence of gate closure.

Hard gate closure would prevent the second of these: without the ability to rebid itself unavailable at the last moment,[18] a generator would be obliged to fulfil its offer by following the dispatch instruction it receives from AEMO. This is probably perceived by peakers to be a very important ability at present, because they have been experiencing a large number of isolated 5-minute spikes to extreme prices.

[15] Yarrow, p. 12.

[16] Note that the legitimate economic rents in question should be very much smaller than the price spikes that result from late rebids which exploit timing issues due to lack of gate closure. As shown in Annex 3 of the Yarrow report, the rent should be bounded by the incremental cost of the next-most-expensive generator.

[17] See AEMO, *Fast-start inflexibility profile process description,* October 2014.

[18] *Ibid.*, pp. 7-8.

However, many of these isolated spikes are caused not by genuine supply-demand issues but by late rebids. Introducing gate closure will prevent these late rebids and significantly reduce the problem.

Without late rebidding, the remaining causes of unpredictable price spikes would be surprise increases in demand or reductions of supply. The latter could be caused by generator or network trips. In these cases, the price spike is likely to persist for at least a few dispatch intervals, so there is no need for most fast-start generators to reject the resulting dispatch instruction.

In summary, introducing gate closure will tend to increase the risk premium that a fast-start generator would have to charge for a cap contract, **compared to that in a hypothetical market that has neither gate closure nor late strategic rebidding**. However, **compared to the status quo**, the introduction of gate closure should on balance reduce risks, and hence reduce the risk premium borne by consumers.[19]

5.3 Gate closure should not hinder ancillary services dispatch

It has been suggested that late rebids might be essential in working around limitations in NEMDE's algorithm for co-optimised dispatch of energy and ancillary services. However, AEMO's documentation indicates that affected generators can escape both the "trapped" and "stranded" states without needing to rebid.[20]

5.4 Constraining other late bidding behaviour may do little harm

It has been suggested by several generators that consumers benefit from generators' ability to rebid capacity at short notice from high to low price bands. Energy Australia alluded to this in their presentation at the public forum in May 2014, as did AGL in their submission, and the Options Paper gives an example:

> *"a coal-fired generator may rebid capacity into lower price bands to maintain a minimum level of output in response to falling demand."*[21]

To be in this situation suggests that the generator has offered its energy at a higher price than it is willing to accept. Its initial offer stated that it was unwilling to generate that amount of energy unless the price was at least $X/MWh. For it to have to rebid as described indicates that this initial offer was misleading: the generator actually wants to generate a certain amount regardless of the price. If gate closure restrained the generator's ability to use this strategy of bidding high

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[19] While it is probably beyond the scope for this consultation, it is worth noting that it may be possible to achieve a yet lower risk, lower cost outcome by improving the dispatch process such that AEMO takes into account inter-temporal issues when dispatching fast-start generators, so that the generators have no need to rebid in anticipation of high prices and no desire to reject dispatch instructions. This is common in many other electricity markets: generators provide start-up costs and/or minimum run times as part of their offers, and the market operator seeks the optimal solution to the unit commitment problem. We understand that there may be some reticence to attempt this in the NEM, given the experience of gaming of start-up costs in the VicPool era. However, those issues arose with long-lead-time baseload generators; it seems likely that the problem would be much more tractable if limited to fast-start units.

[20] AEMO, *Factors contributing to differences between dispatch and pre-dispatch outcomes,* February 2012, p. 10.

[21] Options Paper, p. 11.

and then rebidding lower if it fails to clear a sufficient quantity, then the generator would have to use a different strategy: revealing its actual preferences in an earlier bid. This is different to the status quo, but not worse. Having more meaningful initial bids would not be a bad thing.

The Options Paper also suggests that gate closure may lead to situations where

> *"a generator may anticipate being constrained-off due to congestion and may rebid to the market floor price prior to gate closure, only to find itself exposed to a negative market price."*[22]

By offering its capacity at the market floor price, the generator was telling the market that it wanted to generate that amount of energy regardless of price outcomes – in fact, that it was even willing to pay $1,000/MWh to do so. Why should the generator then consider it unreasonable to have that offer taken up? That it was hoping to manipulate quirks in the NEM's handling of transmission constraints is no excuse.

This practice is called "disorderly bidding". The correct solution is to reform NEM dispatch and transmission pricing arrangements[23] so that these quirks do not occur. Making disorderly bidding less risky is not a good reason to eschew gate closure.

5.5 It is not unreasonable to give consumers the final say

Several generators have suggested that restrictions on rebidding would be unfair, as they would limit scheduled generators' actions while leaving consumers able to respond to generators' final bids. Yarrow addresses this issue conclusively:

> *"Many markets (e.g. the local supermarket) have the feature that the supplier posts prices (makes offers) and the final decision whether to purchase or not, and in what quantities, is left to the customer. That is, there is a sequence to decisions: supplier first, customer second."*[24]

Yarrow suggests that one benefit of applying this approach to the NEM is that it may encourage greater demand-side participation. While this is an admirable goal, we believe there is a much simpler reason why this approach makes sense: unlike generators, who can be price-setters, consumers have no reason to practice economic withholding, so there is no harm in them having the final say.

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22 *Ibid.*, p. 73.

23 There are several reform processes underway which may address this. A proven alternative would be to adopt nodal pricing, as most of the markets surveyed in the CEG report have done.

24 Yarrow, p. 27.

6 Do the benefits of gate closure outweigh the potential harm?

Having considered the benefits, which could be substantial and lasting, and the potential harms, all of which seem comparatively minor, we have to conclude that it is very likely that they do.

7 Gate closure options

Table 5.2 in the Options Paper sets out five possible types of gate closure and four suggested timings:

7.1 Types of gate closure

Our conclusion from the examination of the current "good faith" requirements is that reporting requirements around rebids achieve little: highly motivated and creative traders can produce a plausible reason for any rebid. As a result, we believe that Option E would prove ineffective.

Our conclusion from the discussion around the "Generator ramp rates and dispatch inflexibility in bidding" rule change is that there is no clear distinction in the NEM between parameters which reflect physical characteristics of plant and parameters which can be manipulated freely for trading purposes. As a result, Option D is also a non-starter.

This rule change is seeking to restrain gaming by generators with large portfolios. These organisations tend to have the most flexibility, the most creative bidding strategies, and the greatest ability to exercise market power. The accommodation suggested in Option C seems to open up loop-holes for them to invent new games. However, it might be workable if the rebids for other units in the portfolio were restricted such that they could only replace the volumes lost at the unit that became unavailable, at the same prices.

Options A and B both seem viable choices.

7.2 Timing of gate closure

Per Yarrow:

> *"Significant incentives for inefficient re-bidding that is aimed at exploiting non-responsiveness are therefore likely to occur as the time to dispatch shortens to an interval in which dynamic constraints on adjustment, such as ramp rates, start to have a material effect. In general, the incentives tend to be at the maximum at the last possible moment before dispatch"*[25]

This suggests that early gate closure is preferable, as it should result in a more competitive outcome. However, if gate closure is too early, then participants will have to base their final bids on the basis of less reliable, long-range forecasts of

[25] Yarrow, p. 18.

system and market conditions, and be less able to alter their bids in response to unexpected events.

So, choosing the gate closure time involves a trade-off between competitiveness and reactiveness. At the moment, the NEM has chosen to prioritise reactiveness, at the expense of allowing poor competitive outcomes. Putting gate closure many hours ahead would maximise competitiveness – because all aspects of dispatch would still be mutable – at the expense of increased reliance on longer-range forecasts.

Considering the real-time markets surveyed in the CEG report, PJM's day-ahead gate closure prioritises competitiveness over reactiveness, whereas all of the other markets choose a more even compromise, with gate closure between 2 hours and 45 minutes before delivery.

Of the options mooted in the Options Paper:

1. The first timing option – rebids not applying within the current trading interval – does not prevent no-notice surprise rebids, because a rebid lodged immediately before the start of a trading interval can take effect right away. This therefore is not sufficient to solve the problem. By preventing mid-trading-interval rebids, it would, however, at least ensure that any repricing of capacity occurs from the beginning of a trading interval.

2. The second timing option – rebids not applying during the current or next trading interval – seems workable, as it provides gate closure between 30 and 60 minutes ahead of the start of the affected trading interval.

3. Due to the 5m/30m anomaly in the current NEM design, the third timing option – rebids not applying for the next six dispatch intervals – would allow a rebid to be made only five minutes before the start of the trading interval which it affects.[26]

4. The fourth timing option provides gate closure between 90 and 120 minutes ahead of of the start of the affected trading interval.

Although other markets have clearly found merit in putting gate closure up to 2 hours ahead, our view is that the second option may be the best compromise for the NEM: 30 minutes is enough time for all fast-start generators to synchronise,[27] and for many classes of customer to be able to respond.

If there is particular concern about the loss of responsiveness from this option, then an approach could be taken that falls between the first and second options:

[26] We agree that it would also be particularly difficult to implement, because it would break the link between trading intervals and bids.

[27] The FSIP requires participating generators to specify the time they take to synchronise (t1) and to ramp up to their minimum loading level (t2). To be eligible for the FSIP, the sum of t1 and t2 is required to be 30 minutes or less. Inspection of offers in AEMO's Market Management System for an arbitrarily-chosen day shows that the median time to synchronise for FSIP-participating generators was 6 minutes, with only a handful taking 20 minutes or more.

for example, the gate could close 15 minutes before the start of the trading interval, giving effective gate closure 15 to 45 minutes ahead of delivery. This would still allow responses by many customers and a good proportion of the fast-start generators, while minimising any deleterious impact.

Effective gate closure times could be shortened further if the length of the trading interval was reduced.

We note that Macquarie Generation suggests that moving to 15-minute trading intervals would reduce the strength of the distortions resulting from the mismatch between trading and dispatch intervals, while taking advantage of the existing capabilities of the meters on generators and almost all large and medium loads.[28] We see the merit in this approach. Although Macquarie assume that 5-minute dispatch intervals would be retained, it would also be worthwhile considering aligning the dispatch intervals with the trading intervals at 15 minutes duration.

Alternatively, as we have previously suggested, trading intervals could be aligned with dispatch intervals at 5 minutes. We note that Oakley Greenwood reports that the Southwest Power Pool has adopted this approach, with 10 minute gate closure.[29]

7.3 Graduated restrictions on rebidding

As discussed in section 7.1, gate closure has to be fairly hard to be effective. However, since we believe that requiring generators to provide a reason for a rebid does little to constrain their behaviour – as some plausible reason can always be found for any desired rebid – it may make sense to remove this requirement. This will reduce the compliance burden for generators.

If any post-gate-closure rebids are allowed,[30] then the level of scrutiny on these should be intense, so that they are only used to address real physical issues – such as plant tripping – in a way which minimises market impacts and ensures that the instigating participant ends up no better off than if the issue had not occurred.

8 Market rules should be made for the long term

In the debate around this issue, many generators[31] have used an argument along the lines that average wholesale prices are currently below generators' long-run marginal costs, so generators are suffering and consumers are getting a good deal, and hence there clearly cannot be any need for any reform to improve the effectiveness of competition in the wholesale market.

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28 Macquarie Generation submission to the bidding in good faith consultation paper, May 2014, p. 7.

29 Oakley Greenwood, p. 5 & 35.

30 As per Option B or our suggested modified Option C from section 7.1.

31 The National Generators Forum and GDF Suez used this argument in their May 2014 submissions on this issue; other generators have used it verbally.

This is an all-purpose argument which can be deployed against any pro-competitive reform, not just this one. It is also irrelevant: the current oversupply of generation can only be a temporary anomaly, whereas it is important that the market design and rules are appropriate for all circumstances, so that they can remain stable, and provide appropriate investment signals, over the long term.

I would be happy to provide further detail on these comments, if that would be helpful.

Yours sincerely,

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