



17 October 2017

Ben Noone
Adviser
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Mr Noone

RE: Five Minute Settlement (ERC 0201)

ERM Power Limited (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Five Minute Settlement draft determination and draft rule change.

About ERM Power

ERM Power is an Australian energy company operating electricity sales, generation and energy solutions businesses. The Company has grown to become the second largest electricity provider to commercial businesses and industrials in Australia by load¹, with operations in every state and the Australian Capital Territory. A growing range of energy solutions products and services are being delivered, including lighting and energy efficiency software and data analytics, to the Company's existing and new customer base. ERM Power also sells electricity in several markets in the United States. The Company operates 497 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland. www.ermpower.com.au

General Comments

ERM Power remains concerned with the potential for this rule change to lead to poorer outcomes for consumers, particularly in the short to medium term. Against the background of higher prices, risks to reliability in the short term, an uncertain policy environment and concern about the medium to long-term availability of some generators, this is not the time for the AEMC to decide to fundamentally change the operations of the NEM. A three and a half year transition period as proposed by the AEMC is not adequate to mitigate the significant risks and the additional costs to participants and consumers that the shift to five minute settlement will bring.

We have consistently outlined the risks involved with a shift to five minute settlement with respect to contract markets, implementation costs, wholesale and retail electricity prices and generator availability. The draft determination acknowledges that these risks exist and are potentially significant, yet continues to dismiss them completely or assumes that they are certain to be resolved. ERM Power considers this to be a highly optimistic assumption.

As stated in our submission on the AEMC's Directions Paper, aligning dispatch and settlement timing is logical from the perspective of economic theory. Yet, in order to fully realise any improved efficiencies it is crucial

¹ Based on ERM Power analysis of latest published financial information.

that the market is compatible and able to sustain a change of such magnitude. In time, as technology develops to allow both the instantaneous dispatch of demand management and faster starting of supply capability, making this change would be a logical step as part of the evolution of the market. Indeed, were the NEM being established now rather than in 1998, it is highly likely that aligned dispatch and settlement would be used. However, this is not the reality of the energy market in 2017. The ramifications of getting this wrong are severe and the costs will ultimately be borne by the consumer. As such, we firmly contend that the AEMC should be cautious in deciding whether or not to implement this rule change by looking beyond economic theory and carefully considering the current vulnerability of the market to withstand such a change.

The AEMC has indicated that its proposed start date of 1 July 2021 is the earliest possible date to allow for a smooth transition. Allowing for a later start date than 1 July 2021 would provide more time for existing generators and retailers as well as AEMO to test and implement system changes as well as for any new businesses to develop, test and implement new technologies and products for the five minute settlement market. A later start date would also reduce the costs involved with re-opening some long-duration contracts such as PPAs.

The experience of the industry adjusting to the 'Power of Choice' reforms to be implemented on 1 December 2017 provides a timely example of the risks of rushing implementation. Timelines for new procedures and rules have pushed out leaving industry very little time between the finalisation of AEMO procedures and the introduction of the changes. Given this experience we believe the AEMC should delay implementation by a further two years to 1 July 2023 to ensure that industry and AEMO have sufficient time to guarantee a smooth implementation including adequate time for a market test environment for five-minute bidding and five-minute settlement.

Finally, it is difficult to understand the urgency the AEMC places on this rule change when the industry is in the midst of refining and re-defining many aspects of the physical and financial markets as a result of the recommendations arising from the Finkel Review. There are many avenues being explored – for example day ahead markets, demand response market, generator reliability obligations etc. – that have a relationship to market settlement and timing. Many would argue that the current energy predicament that exists today has been caused by narrow solutions to narrow problems without considering the implications for the entire system. It would make a lot of sense to consider five minute settlement alongside the entire set of Finkel Review recommendations, allowing industry to then plan on implementing a comprehensive and cohesive entire set of reforms.

The submission below outlines our continued concerns with the impacts of this rule change on generators, retailers and consumers and additionally proposes some changes to the draft rule proposed by the AEMC.

I welcome the opportunity to discuss this submission in detail. Alternatively, please contact Regulatory Affairs Policy Advisor Ben Pryor on (03) 9214 9316 or BPryor@ermpower.com.au.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Jon Stretch'.

Jon Stretch
Managing Director and CEO
ERM Power Limited

Contract market implications

As we have previously argued, a shift to five minute settlement has the real potential to reduce contract market liquidity. Hedging contracts are used by both generators, retailers and large users to manage the risks of wholesale market volatility. ERM Power firmly believes that there is a significant risk that this rule change will increase prices to consumers in the short to medium term and potentially even over the long term following implementation.

The contract market may well see new providers and products emerge to offset the loss of some cap contracts and potentially swap contracts. However, this will be highly dependent on the development and deployment of new technologies such as batteries and very fast-start gas turbines.

Notwithstanding, the volumes available will likely reduce and therefore the price offered will almost certainly increase under five minute settlement. It may take several years, well beyond the proposed implementation date of 1 July 2021, for the market to find an equilibrium at acceptable prices to participants. The contract market will start to see the initial impact of five minute settlement from the middle of next year when contracts for the 2021 calendar year and 2021-2022 financial year start trading.

We are particularly concerned by the AEMC's minimal consideration of the potential for the five minute settlement to reduce retail competition as a result of declining contract market availability. The draft determination simply states:

"The Commission would be concerned if a move to five minute settlement affected the ability of market participants to manage risk through the wholesale contract market, as this could damage competition in the retail market and lead to higher prices for consumers."

Yet, the discussion that follows fails to consider and discuss this at all. Rather, it somewhat simply assumes that new sources of contracts will develop, that these will be close to current prices and that there will be no negative impacts of consequence on retail competition. We believe the AEMC must provide its reasoning as to why it predicts market competition will not be adversely affected by the implementation of the rule, rather than optimistically hoping for the best. The Commission argues that contract market liquidity should remain as existing peaking plant will be incentivised to bid in below \$300/MWh to ensure that cap contracts are not triggered and that when prices are above \$1000/MWh they are usually operating. The AEMC's analysis misses several key issues.

The AEMC is assuming that cap contracts will still be offered and that this encourages bidding below \$300/MWh. This is far from certain. Peaking generators may choose not to take the risk of offering the same volume of cap contracts and as such have little incentive to keep prices below the trigger level. The Commission also uses analysis that shows that at prices greater than \$1000/MWh, peaking generators are generally operating. What this analysis misses however, is what the wholesale price was in the prior dispatch interval, or the previous dispatch intervals within the half hour. If the price was already over \$300, or it was clear that the trading interval was likely to settle over \$300/MWh then it would be logical for generators to already be operating. ERM Power considers it would be more useful to examine the generation levels of peaking generators prior to sudden, unpredictable price spikes. This would give a better indication of the risks to which cap sellers would be exposed following a move to five minute settlement.

Furthermore, the AEMC also notes that price spikes greater than \$1000/MWh generally occur when demand is higher than 80 per cent of the quarterly maximum. Yet the Commission also found that

South Australia does not fit this profile because of the high volume of wind and solar PV generation. Seeing as these intermittent technologies are forecast to be the dominant sources of new generation capacity in other NEM states as the existing fleet is replaced, it is reasonable to conclude that the South Australian experience will spread. This may lead to an increasing disconnection between demand and prices, resulting in a riskier market for all participants.

ERM Power considers that the AEMC's assumptions on contract liquidity are highly optimistic. The AEMC must take a more cautious approach in considering how a drop in cap contract liquidity could lead to a reduction in retail market competition.

In the event that new sources of contracts do not develop, or a reduction in overall contract liquidity (including swaps) eventuates, the AEMC must delay the introduction of this rule change. If price rises for customers can be avoided by delaying implementation until the market can technologically develop and foster new sources of contracts, then a delay is essential.

Contract markets will start to show the impacts of this rule change, if implemented, by the middle of next year. A step change in contract prices or liquidity, absent any other drastic changes to explain them, will provide an indication of how the market believes five minute settlement will impact prices. Should the market demonstrate a fall in liquidity or an increase in prices outside of normal market fluctuations, and this can be attributable to a shift to five minute settlement, then we would expect the AEMC to revisit this rule change as a matter of the highest priority.

There are already signs that contract liquidity is falling in part due to the closure of thermal generators such as Hazelwood and Northern. The bulk of the replacement supply capacity at this stage is coming from existing underutilised thermal generation capacity and intermittent wind and solar PV. To date, this intermittent generation has been reluctant or unable to offer firm swap contracts as it is impossible to guarantee how much energy they will produce and when. Large scale battery storage is only being deployed backed by large government subsidies and in insufficient size and quantities to allow the provision of capacity firming services for intermittent generation. Given this background, ERM Power finds it difficult to understand why the AEMC would take steps that will further imperil the contract market by proposing to implement five minute settlement.

The closure of Hazelwood has had a marked impact on the price of cap contracts in Victoria. In July 2016, flat cap contracts for the 2017-18 financial year were \$4.40/MW. In July 2017, following the closure of Hazelwood, flat cap contracts for the 2017-18 financial year had increased to \$11.91/MW, a 170 per cent increase. For peak cap contracts, the increase is more than 200 per cent. This shows the impact of a tightening supply-demand balance in the market. We maintain there is a real risk that five-minute settlement will produce at least similar results and will have a detrimental impact on the cost of energy for customers.

Impact on demand response

The draft determination indicates that the AEMC is very optimistic about the potential role for fast-acting demand response to contribute to reducing the need for cap contracts under five minute settlement. This assumes that offerings for demand response are "firm" in nature and there will exist a willingness on the part of consumers to offer such a product. ERM Power has one of the largest portfolios of demand response in the NEM and as such we have a strong understanding of the challenges and opportunities in contracting for demand response. Demand response is a complex investment for both the party (or parties) providing the response and the party requesting the service.

It is difficult to secure firm volumes and firm timing of any response. Businesses may need to fulfil orders or be unable to respond to multiple events within the same day to prevent excessive wear and tear on machinery or a significant loss of productive output. There are many and varied considerations that go into providing demand response.

As we have previously indicated to the AEMC, there is a strong risk that industrial demand response, which makes up the bulk of demand response in the NEM today, will not be economic under five minute settlement due to the time needed to prepare and activate demand response. This generally takes more than five minutes to allow for businesses to prepare to reduce demand safely. It is entirely possible that any increase in very fast-acting demand response as required to be economic under five minute settlement will be more than offset by a fall in existing large-scale demand response which may no longer be economic under five minute settlement. This will result in higher costs for large energy users who currently benefit from demand response contracts.

Furthermore, demand response currently does not bid into the market and instead responds to the price set by AEMO as part of its dispatch process. Demand response currently does not participate in the price setting calculation. As such, any additional demand response does not result in lower price events because the high price has already eventuated. Following a price spike in a five minute market, if demand response does occur, the National Energy Market Dispatch Engine (NEMDE) may then, having seen demand fall, set a lower price for the next trading interval leading to the demand response switching off. The NEMDE, seeing a rebound in demand, may lead to another price spike for the following five minute trading period, resulting in a demand response and the cycle continuing. This scenario would result in increased volatility in the wholesale market.

Prices would be more efficient if price responsive load were required to signal these intentions to AEMO as part of the bidding process. Yet, the AEMC rejected this very option in the *Non-scheduled generation and load in central dispatch rule change*. In our view it is contradictory for the AEMC to propose to move to five minute settlement on the grounds of unquantified efficiency gains while simultaneously rejecting a rule change that would also have improved market efficiency with fewer risks and significantly lower costs to the wider market. To be clear, we are not advocating for all load to provide bids for consumption, only those loads which choose to operate in a price sensitive mode. Nor do we believe that a strict compliance regime would be necessary.

We would also caution the AEMC against assuming that all future demand response will be used to address wholesale market issues. With changes to the Regulatory Investment Tests, some proportion of future demand response may be called upon to help solve network constraints rather than to reduce demand at times of peak pricing. Network peaks and wholesale market peak do not necessarily coincide. Demand response dispatched to meet one purpose may then not be available to meet the other. The AEMC should be mindful of these impacts on the volume of demand response under five minute settlement. It is by no means certain that aligning dispatch and settlement will increase demand response; we believe there is a strong case that there could be no change or even a decrease in available demand response following the rule change.

Cost outcomes for consumers

As discussed by the AEMC, the introduction of five minute settlement could lead to the introduction of new, fast-response generators including aero-derivative gas turbines or battery storage. Indeed, we agree that five minute settlement will make these technologies more attractive economically. It will also make investments in existing gas-fired peaking generation and hydro less attractive commercially

and result in retirement of this plant earlier than would otherwise be the case. At present, these new technologies have a higher capital cost than other alternatives such as frame industrial gas turbines. In addition, none have the capability to start from rest and provide an average of 100 per cent of registered output over a dispatch interval. Aero-derivative turbines may only achieve average output 20-22 per cent of nameplate capacity whilst batteries, which AEMO have indicated will be subject to ramp rate limits, may only achieve 50 per cent. As such, wholesale prices will need to be higher than they are today in order to make such investments economic. The end result of this will be higher costs to consumers in the short to medium term at the very least.

We remain concerned that the AEMC has still not conducted a detailed assessment of the costs and benefits of the rule change. The draft determination contains just a cursory discussion of the potential benefits, arguing that even an average \$0.50/MWh reduction in wholesale prices would result in \$100 million in lower costs for consumers. Yet such an approach ignores the arguments made by ERM Power and others that this rule change has the real potential to increase costs. Using the Commission's same logic, if this rule change increases average wholesale prices by \$0.50/MWh this would represent a \$100 million cost to consumers. Similarly, if as a result of this rule change, there are just three additional five-minute dispatch intervals close to the market price cap within a twelve month period, then this would also lead to an additional \$100 million cost to consumers. The impact on consumers is too great to simply downplay costs and optimistically hope the new market will provide hedging support.

Ultimately, such a discussion on wholesale prices is purely hypothetical. Several organisations have provided the AEMC with indications of the costs of implementation, which the AEMC has chosen to dismiss. Furthermore, there has yet to be a genuine analysis of the impact of the rule change on the wholesale market. We acknowledge that there will be difficulties in modelling the impact of five minute settlement on the NEM seeing as existing models are based on 30 minute settlement, however, this change to models is not an insurmountable technical challenge. Whilst the commission may incur a cost for the modelling to be undertaken, this cost is likely to be trivial compared to the costs this rule change will impose on the NEM. Therefore, we continue to highlight the very real risks of shifting to five minute settlement, while the Commission relies purely on expectation of what wholesale market benefits might eventuate. It is clear that the costs and risks of the rule change are very real but the benefits are purely hypothetical. We therefore fail to see how the AEMC can decide that the five minute settlement rule change will or is likely to meet the national electricity objective.

We fundamentally disagree with the Commission's dismissal of arguments about the cost of implementation on the grounds that these are minor relative to the scale of investment required as part of the transition to a lower emissions energy market. The costs of transition will not be marginal or trivial, the costs of this rule change to be borne by participants and consumers are real and of significant magnitude. In addition, whilst there is no doubt that the NEM is facing significant investment costs going forward, the Commission has failed to consider or quantify the additional cost for replacement generation that will be required under a five minute settlement market design compared to the status quo. These additional costs are also real and significant.

Comments on the draft rule

The AEMC has proposed various changes to the draft rule to facilitate the change to five minute settlement. These are understandably quite comprehensive given how much the rules are based around the current structure of five minute dispatch intervals and 30 minute trading intervals. Most of the changes proposed by the Commission make sense in light of the change to five minute settlement but some may not achieve the stated aims or give industry sufficient levels of information. ERM Power makes the following comments around the proposed amendment rules.

Pre-dispatch schedule

The AEMC has proposed that the pre-dispatch schedule will continue to operate on basis set out in clause 3.8.20(a) whereby:

Each day, in accordance with the timetable, AEMO must prepare and publish a pre-dispatch schedule covering each trading interval of the period commencing from the next trading interval after the current trading interval up to and including the final trading interval of the last trading day for which all valid dispatch bids and dispatch offers have been received in accordance with the timetable and applied by the pre-dispatch process.

In the draft amendment rule, the Commission proposes that this pre-dispatch schedule would be published with a five-minute resolution for a minimum of 60 minutes with a 30-minute resolution for the rest of the pre-dispatch schedule. Under five minute settlement, the pre-dispatch schedule will act as a crucial source of information for market participants and for demand response to understand the likely prices in the wholesale market. As such, we consider that the pre-dispatch schedule should have a five-minute resolution for a minimum of 180 minutes set out in the Rules. This would allow for peaking generators and for new technologies such as batteries to plan adequately for any expected peaks in wholesale prices. This should help to provide greater levels of supply in the market and potentially avoid periods of extremely high prices.

Given the importance that the accuracy that the pre-dispatch schedule will have for the ongoing operations of the market, ERM Power also believes that clause 3.8.20 should contain formal obligations for AEMO to monitor and report weekly on the accuracy of their demand and intermittent generation forecasts prepared. The weekly report should detail the level of accuracy of the pre-dispatch schedule in the immediate 60 minutes prior to dispatch and contain details and cause of errors for significant deviations.

Entitlements to compensation in relation to AEMO intervention

The AEMC has also proposed changes to Affected Participants and Market Customers entitlements to compensation in relation to AEMO intervention, in clauses 3.12.2 and 3.15.7B. AEMO proposes changing the threshold from \$5000 to \$1000. A shift to five minute settlement would necessitate changes to these thresholds but it is unclear why these thresholds are effectively increasing beyond the proportion of the six-fold increase in trading intervals. In order to remain consistent with the approaches taken regarding issues such as the cumulative price threshold, where the threshold has been arithmetically divided by six. In this case however, the original threshold of \$5000 has been divided by 5, ostensible to retain a 'round' number threshold. In order to maintain consistency, ERM Power believes that the threshold for compensation should be set at \$830 unless the AEMC can clearly demonstrate the need to effectively increase this threshold by 20 per cent.

Spot market price sensitivity

In its proposed amendment to clause 3.13.4(h), the AEMC has provided the following draft clause:

Together with its forecast spot prices, AEMO must publish details of the expected sensitivity of the forecast spot prices for each 30-minute period to changes in the forecast load or generating unit availability.

Given the importance of market operations of the final 60 minutes of pre-dispatch prior to dispatch, ERM Power considers that the rules should require AEMO to publish details of the expected sensitivity of the forecast spot prices for each Trading Interval in the period of 60 minutes prior to dispatch.

Variation between forecast and actual prices

The AEMC has proposed that the AER should continue to report on any wholesale market prices which average over \$5000 in a 30 minute period as per the current arrangements. The Commission also requires the report to consider the withdrawal of generation capacity and network availability.

ERM Power believes that the draft clause is insufficient in scope. Rather, we propose that the AER's report must:

describe the significant factors that contributed to 30 minute price exceeding \$5,000/MWh, including changes in AEMO forecasts of regional demand, AEMO's forecast of unconstrained intermittent generation, the withdrawal of generation capacity and network availability;

Under five minute settlement, AEMO's forecast accuracy will be critical to the market being aware of the underlying conditions that contribute to wholesale price outcomes. Significant inaccuracies in AEMO's forecasts of demand or unconstrained intermittent generation may lead to high price events. Without requiring these aspects to also be included to any AER report, there is a risk of generators being blamed for high prices that were beyond their capabilities, potentially undermining confidence in the market. ERM Power considers that the rules should ensure that all possible impacts on high price events be considered rather than limiting this only to the withdrawal of generation capacity and network availability.