



18 May 2017

Kris Funston  
Senior Director  
Australian Energy Market Commission  
PO Box A2449  
SYDNEY SOUTH NSW 1235

Dear Mr Funston

### **RE: Five Minute Settlement**

ERM Power Limited (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Directions Paper on the five-minute settlement 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 load<sup>1</sup>, 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](http://www.ermpower.com.au)

### **General Comments**

The Five Minute Settlement rule change comes against a backdrop of profound change in the energy market with the potential for the Finkel Review ('the Review') to reshape the National Electricity Market (NEM). While a five-minute market may be a recommendation of the Review, we consider it premature for the AEMC to make a decision on such a fundamental aspect of the market as settlement timing while a review of the operations of the NEM is underway.

Aligning dispatch and settlement makes sense from the perspective of economic theory, and over the long term will be a necessary evolution for the market. However, ERM Power has serious concerns about whether the market can evolve with this rule change. We believe that at least in the short term, implementing five-minute settlement will lead to cost increases at a time when prices are already at critically high levels. Our customers, some of the largest energy users in Australia, cannot afford to be the subjects of an experiment in energy market design. ERM Power considers that the AEMC should only seek to implement the rule change once it is clear that the cost, security and reliability of energy supply will not be threatened. A transition period, of whatever duration, will not reduce these risks to

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<sup>1</sup> Based on ERM Power analysis of latest published financial information.

an acceptable level. We recommend that the AEMC only implement the rule change with a suitable transition period after the following conditions are met:

- Development of new sources of cap contracts;
- Sufficient quantity of generation capable of dispatching from rest within 5 minutes in each NEM region;
- Availability payments for fast-start plant able to generate for extended periods of time;
- Changes to the thresholds for non-scheduled generation; and
- Arrangements for scheduling the dispatch of aggregated battery storage are in place.

We believe that implementing this rule change in the absence of these reforms will create unnecessary and unreasonable risks for the consumers in terms of cost, reliability and system security. These issues are discussed in turn below.

### **Cost**

There is currently significant concern within Australia about the cost of energy to both household and businesses. In our view, making this rule change would lead to cost increases to consumers without any clear benefit. As will be discussed in more detail later in the submissions, this is a result of the reduction in cap and swap contracts available to retailers to manage their exposure to the volatility in the spot market. With less contract hedging available, retailers would be more exposed to the risk of price volatility and so prices will rise as a response to this risk. Alternatively, the increased risk of volatility will lead to greater demand for contracts, which would be in shorter supply. This would increase the costs for a retailer to hedge its portfolio, which would be passed on to end users via higher prices. Such an outcome could also threaten competition in the retail market, making it difficult for new entrants and second tier retailers to compete with larger, vertically-integrated competitors. This is surely a poor outcome for consumers. These higher costs will persist until other sources of contracts are available in the market.

Retailers will incur additional costs as a result of having to update existing IT processes and manage the increase in data streams and changing forecasting arrangements. Retailers will also need to produce new contract terms, new pricing structures, update online customer portals and develop new material for customers to explain these changes. Furthermore, hedging contracts would need to be renegotiated, which adds further costs to the transition. We consider the figures provided by Russell Skelton in his presentation at the AEMC's five-minute settlement forum to be a reasonable estimate of the costs involved in renegotiating these contracts.

### **System security**

ERM Power considers that the AEMC has not given sufficient consideration to the potential for this rule change to reduce system security. System security refers to the ability of the system to operate within defined technical limits, even if there is an incident such as the loss of a major transmission line or large generator.

Given that one of the supposed benefits of this rule change will be to incentivise the installation of battery storage, it is important to consider how the unrestricted dispatch of energy from batteries could lead to significant risks to system security. The current settings for scheduled generation would potentially allow for large volumes of energy to be dispatched without visibility to the Australian

Energy Market Operator (AEMO) as part of its dispatch process via the National Electricity Market Dispatch Engine (NEMDE). Large volumes of energy suddenly coming into or out of the market to take advantage of high prices (and exiting when prices are low) would destabilise the secure operation of the market through sudden changes to frequency and voltage. Generators online at the time would need to ramp up or down substantially in order to keep the system secure.

This is not an insurmountable challenge. It could be resolved relatively simply, by ensuring that battery storage bids into the market and dispatches when instructed by AEMO like other generators. Similarly, where large volumes of batteries (either standalone utility scale or aggregated small-scale) intend to recharge from the power system in response to low wholesale prices this load should also be bid as Scheduled Load so that AEMO can control the possible large deviations in system load.

### **Reliability**

We also consider that implementing this rule change in the next few years would lead to challenges to and reliability – having enough generation and network capacity to supply customers. Adopting this rule change would likely make a proportion of the existing fleet of gas-fired peaking generators uneconomic, causing them to exit the market. This reduction in supply comes at a time when the supply and demand balance is tight following the exit of several baseload generators in the NEM (e.g. Northern Power Station and Hazelwood), with more retirements expected in the next few years. The further removal of relatively low-emissions gas-fired plant would exacerbate any supply shortages, particularly during periods of extended high demand. While new fast-start technologies such as battery storage may be able to dispatch energy quickly, battery storage in particular is limited in terms of how long it can provide energy. Not all technologies are suitable for long periods of supply shortages. It is crucial that there is an adequate supply of fast-start plant capable of responding for extended periods of time when the market shifts to five-minute settlement. ERM Power believes that introducing availability payments for such plant would help to ensure reliable energy supply under a five-minute market.

### **Transition period**

ERM Power rejects the notion that a transition period alone will minimise costs. It is essential that the necessary conditions for five-minute settlement to actually produce benefits are in place before an implementation date is set. This is the only way to minimise costs and risks to the market and energy consumers. We firmly believe that the AEMC's proposed three-year transitional period, with a further two-year transition for some load, will lead to higher costs than necessary. It fails to distinguish whether the market is in a position to adjust without threatening security, reliability and costs.

Additionally, the proposed two-stage transitional period, will lead to retailers and AEMO having to operate two IT systems simultaneously for different types of load. This will increase costs more than is necessary. A single period would allow additional time for market participants to ensure that existing contracts based on 30-minute settlement expire and for businesses to design and test new systems.

### **Conclusion**

ERM Power believes it is premature for the AEMC to introduce this rule change at this stage. At a time when energy costs are of major concerns to all users – both residential and commercial – the AEMC must tread carefully in hurriedly implementing a rule change that will increase costs if the market is not ready. If consumers are truly to benefit from this rule change, contract market liquidity must be

maintained and peaking generation needs to be available to provide energy for long periods where intermittent renewable generation is not available.

Our submission sets out our responses to the questions asked by the AEMC in the discussion paper.

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](mailto: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

### Question 1 – Assessment Framework

- a) How suitable is the proposed assessment framework for this rule change request?
- b) Are there any additional factors that should be considered in assessing this rule change request?

The AEMC has identified a range of factors that it will use to consider this rule change including technology neutrality, generation and demand response flexibility, price risk exposure, and supply and demand side competition. We believe the AEMC has correctly identified many of the factors that determine how beneficial or costly the shift to five-minute settlement will be. However, we consider that the Commission has not considered the potential for this rule change to lead to detrimental outcomes for system security and reliability.

Given recent events in South Australia, and given the work of the AEMC as part of its System Security Markets Framework Review, it is clear that there is a great deal of attention being paid to system security. Unfortunately, this rule change may reduce system security especially in the short term. This is due to the potential for gas-fired generation to exit the market as a result of the rule change. Due to the inability of most (if not all) gas-fired peaking generators to respond within five minutes, and the technical difficulties and costs involved with retrofitting plant in order to respond within five minutes, gas-fired generators may find that it is in their economic interest to sell their gas contracts and exit the market rather than use the gas to generate electricity. This would reduce the supply of flexible generation in the market, potentially leading to a lack of supply and synchronous generation at key times.

There are additional risks that arise from the possibility of large volumes of behind-the-meter battery storage dispatching into the market without AEMO being aware of this intention. Battery storage acts completely differently to solar PV, another behind-the-meter technology, as the drivers for its dispatch are completely different. The output of small-scale solar PV is relatively smooth and reasonably predictable at an aggregated level as it is based on weather and geography. In contrast, battery storage operates on a completely different set of drivers. Individual systems may respond to retail tariffs, charging and discharging based on how a consumer's retail tariff changes through the day. An aggregator, operating thousands of systems on their customers' behalf, is likely to be responding to prices in the wholesale market rather than responding to security of supply signals. AEMO will require batteries, aggregated systems in particular, to be visible to the market in order to factor their actions into the NEMDE to ensure efficient dispatch. The best way to do this is by requiring aggregated systems to bid into the market.

If batteries are not scheduled by AEMO and simply enters or leaves the market after prices are set by NEMDE, then the NEM may see rapid fluctuations in voltage and frequency as load appears to fall substantially after a price spike, but then returns to prior levels if the price spike is not sustained. This is likely to lead to over-frequency and under-frequency events in very short periods of time. Other generators will need to then ramp down or up rapidly in response in order to maintain the system in a secure operating state. This will invariably result in an increase in the enablement of FCAS services as AEMO attempt to maintain the power system in a secure state. It is also possible that, at times, insufficient ramping response will be available to maintain the power system in a secure state without the dispatch of under frequency load shedding or over frequency generation shedding.

It is therefore essential that the intentions of battery storage are known to the market through bidding into the market as a scheduled generator and scheduled load. The AEMC is already investigating the

possibility of changing the threshold for classification as a scheduled generator as part of the ‘Non-scheduled generation and load in central dispatch’ rule change. This rule change has seemingly been delayed in favour of the Five Minute Settlement Rule change despite the similarity of issues that both rule changes are seeking to address. ERM Power strongly considers that the AEMC should have considered all rule changes together as a package that sought to improve the efficiency of the NEM.

Additionally, we find that the AEMC’s assessment protocol is based on a flawed assumption that the current settlement arrangements are not technology neutral, but that a five-minute settlement period would be. This begs the question: at what time interval would the market become technology neutral? For instance, would an aligned 15-minute settlement and dispatch interval be technology neutral? The AEMC has refused to investigate such an option despite the fact that this could bring similar benefits with lower risks. ERM Power and others raised this idea during the AEMC’s working group meetings on five-minute settlement on several occasions. With no exploration of alternative options, or a cost-benefit analysis, the AEMC is unnecessarily limiting its analysis of how to increase the efficiency of the wholesale market by improving dispatch outcomes.

As discussed during the AEMC’s public forum on 4 May, batteries are already entering the market and are able to be profitable under the current arrangements. A shift to five-minute settlement would only increase the profitability of battery storage. Even under current settlement arrangements, fast-start technologies still have an advantage over slower technologies. A new installation able to ramp up faster than other technologies may be dispatched ahead of other, slower technologies in the merit order. It is therefore unclear how the AEMC determines that five-minute settlement is the only way of making the market ‘technology neutral’.

Finally, ERM Power wishes to comment on the international experience of aligning settlement and dispatch intervals. In the Directions Paper, the AEMC pointed to the US Federal Energy Regulatory Commission’s (FERC) decision that requires FERC-regulated energy markets – accounting for around two-thirds of US electricity load – to align dispatch and settlement. As some US markets currently use five-minute dispatch, this is presumed to be advocating for five-minute dispatch and settlement, but as ERM Power has mentioned previously with respect to this rule change, dispatch and settlement could be aligned on different timeframes such as 15 minutes or even 30 minutes. The FERC decision does not specify that five-minute settlement be used.

These markets also operate on a fundamentally different basis to the NEM. We urge the AEMC to recognise that five-minute settlement has not been implemented in a pure energy-only market anywhere in the world. In the UK, the market is moving from an energy-only market to a capacity market with changes to aligned 30-minute dispatch and settlement. In the US, with the exception of ERCOT, energy markets have capacity markets attached. In addition, many of the US markets including ERCOT operate ancillary service markets for spinning and non-spinning reserve to incentivise generation that is capable on coming online from rest within a certain time period (e.g. 10 minutes) and maintaining this for a certain number of hours.<sup>2</sup>

In Alberta, where alignment of settlement and dispatch was being considered, at a number of different time periods, the market is first moving from energy only to a capacity market to ensure secure and reliable energy to consumers. The current schedule is for the capacity market to commence in 2021. At present, dispatch in the Alberta market is calculated every one minute and settlement is based on

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<sup>2</sup> See Zhou et al. (2016) ‘Survey of U.S. Ancillary Services Markets’, Argonne National Laboratory.

the time-weighted average of these prices over 60 minutes. The Market Price Cap in Alberta's energy only market is \$999.99, which results in a significantly lower risk profile to retailers than the NEM's \$14,000/MWh price cap.

Implementing a five-minute market in the energy-only NEM would therefore represent a live and possibly damaging experiment in energy market design.

### **Question 3 – Impact of an evolving market**

How does an aging generation fleet together with rapidly evolving digital technologies and the increasing role of intermittent generation affect the prospects of five minute settlement as compared with 30 minute settlement?

The NEM is currently in a state of transition with greater volumes of intermittent generation coming online, while older, predominantly coal-fired generation is exiting the market. The supply and demand balance is tight following the exit of Wallerawang (2014), Northern and Playford (2016) and Hazelwood (2017) power stations. More baseload power stations are projected to retire in the coming decade. If the AEMC were to implement the rule change using its preferred timeframe of a three-year transition, this would align closely with the planned exit of Liddell Power Station in New South Wales in 2022. The closure of Liddell is scheduled to occur regardless of the rule change and would likely further reduce the volume of swap contracts in the market, thereby further tightening the supply-demand balance in both the contract market and spot market. This is in addition to the risk of gas-fired generation exiting the market at the same time if it is incapable of dispatching to the market within five minutes.

The removal of relatively low-emissions gas-fired plant at this time would exacerbate any supply shortages, particularly during periods of extended high demand. While new fast-start technologies such as battery storage may be able to dispatch energy quickly, battery storage in particular is limited in terms of how long it can provide energy. Not all technologies are suitable for long periods of supply shortages.

This is yet another reason ERM Power believes that if the AEMC must be cautious in considering this rule change. While there may be theoretical benefits to the market in terms of more efficient dispatch, there are a range of risks facing the market in the next few years. Ensuring system security and reliability will be crucial over the short term as well as the long term.

### **Question 4 – Bidding behaviour**

What kinds of generator bidding behaviours would emerge under five minute settlement as compared with 30 minute settlement?

ERM Power has already explained the risks to system security arising due to the unscheduled dispatch of battery storage into the NEM under five minute settlement. Without changes to the thresholds for scheduled generators, battery storage would only dispatch once prices are set for a five minute period, rather than bidding into the market to help set the price. Ultimately, the bidding behaviour of the wider market would be virtually irrelevant at times of high prices if large volumes of non-scheduled energy continued to dispatch into the market without signalling its intentions through bidding.

As flagged by Reposit Power at the AEMC's public forum in Sydney, battery storage is likely to be dispatched in order to arbitrage prices in the wholesale market—dispatching when prices are high and consuming or doing nothing when prices are low or negative. There is nothing wrong with such actions;

it makes perfect sense and would be a reasonable way to use batteries. A problem only arises if this behaviour is not visible to the market or market operator through bidding.

The AEMC is currently investigating a rule change process in parallel to the five-minute settlement rule change which may help to partially address these issues. The non-scheduled generation and load in central dispatch rule change, if made, will reduce the threshold for non-scheduled generation from 30 MW to 5 MW. Under the current rules, battery storage and other small generation is incentivised not to be scheduled and instead to decide when to dispatch into the market after prices are set for each five-minute interval. Aggregated battery (or other technology) systems must bid and dispatch into the market as a scheduled generator in order to ensure that AEMO is able to issue dispatch instructions efficiently.

We reiterate our view that in order to ensure a level playing field, the AEMC must make the non-scheduled generation in central dispatch rule change if it intends to make the five-minute settlement rule change.

**Question 5 – Materiality of the problem**

- a) What other issues are likely to be material in considering the introduction of five minute settlement?
- b) Is there other data or data sources that can better inform the analysis of the materiality of the problem with 30 minute settlement or the move to five minute settlement?

One key issue that is likely to be material in the introduction of five-minute settlement, but which has not been discussed in detail by the AEMC is the impact of the rule change on demand response. Energy Edge’s report for the AEMC found that only an estimated 10 per cent of the NEM’s demand response portfolio is capable of responding within 5 minutes.<sup>3</sup> This would all but destroy the existing demand response in the NEM.

ERM Power operates one of the largest demand response programs in the NEM, which includes the remote dispatch of battery technology. One consequence of the shift to five-minute settlement would be to reduce the potential of demand response to contribute to reducing price spikes. Most demand response activities require more than five minutes to implement. This can be to ensure that systems and settings are ramped down safely and that a business is able to consider the impact on its business operations. The current half hour arrangements mean that businesses are able to extract the value of price spikes early in the trading interval by reducing demand after a price spike. In a five-minute market, most businesses will be unable to respond, reducing the value of demand response to retailers, who may use demand response as part of their risk management portfolio, and businesses who generally receive availability payments or reduced tariffs to provide the service.

Similarly, demand-response capable businesses generally require demand response actions to last for a longer period of time – five minute intervals are not possible. Businesses may need to operate on reduced loads for extended periods – up to several hours. While they could do this if high prices are expected, it would be a gamble in a five-minute market. If high prices did not eventuate, then they would likely have lost significant economic value through lower output without the benefit of not

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<sup>3</sup> Energy Edge, ‘Effect of 5 Minute Settlement on the Financial Market’. March 2017, p49.

paying higher electricity prices. As noted in Energy Edge’s report, the current five-minute pre-dispatch price is unreliable, producing many false positives and failing to project numerous price spikes.<sup>4</sup>

Consequently, changing to a five-minute settlement regime would not improve the ability for businesses to predict price spike events and would remove incentives to undertake demand response activities. ERM Power therefore considers that the AEMC must factor in the devastating effect of five-minute settlement on demand response as part of its decision.

**Question 6 – Demand Side Optionality**

- a) How material are the issues identified around demand-side optionality? Are there any material issues or benefits that have not been identified?
- b) If demand-side optionality is adopted as a temporary measure, should the settlement residue be incorporated in intra-regional residue settlements? If not, how should it be treated?
- c) How might the contract market react if demand-side optionality is adopted on a temporary basis?

ERM Power agrees with the AEMC’s direction that it would implement this rule change on an equal basis with both load and generation settled on a five-minute basis. It is neither efficient nor appropriate for the NEM to operate in a manner that allows participants to pick and choose the aspects of market design that best suit their interests.

Allowing for an asymmetrical settlement where load and generation are settled on different timeframes would lead to inefficiencies in the market by providing different incentives to the supply and demand side. This would almost certainly distort outcomes in the market.

However, as we will discuss later on in this submission, the AEMC’s proposed two-stage approach to implementation where some load will remain settled on a 30-minute basis for two years following the adoption of this rule change will add risk and costs. ERM Power contends that all demand and load must be settled on a five-minute basis at the same time if this rule change is to go ahead.

**Question 8 – One-off contract negotiation costs**

- a) To what extent would a transition period mitigate the one-off contract negotiation costs of a move to five minute settlement?
- b) What length of time would be appropriate to enable contracts to either expire or be adapted to take into account the future implementation of five minute settlement?

As an active participant in the contract market, as a supplier of caps, a counterparty to PPAs and a purchaser of swaps, ERM Power is well-placed to comment on the costs of renegotiating these contracts. Not all contracts will need to be renegotiated, with most if not all ASX-traded contracts rolling off within the proposed three-year transition period. However, there will be some long-term contracts that will have to be reopened, as a change in settlement timing would potentially be classified as a disruption event. The figures provided by Russell Skelton in his presentation at the AEMC’s five-minute settlement forum appear to be a reasonable estimate of the costs involved in renegotiating these contracts.

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<sup>4</sup> Ibid. p54.

ERM Power reminds the AEMC that there are a substantial number of contracts between renewable energy generators producing Large-scale Generation Certificates (LGCs) and retailers. Many of these contracts will extend until 2030 when the Renewable Energy Target (RET) is scheduled to end. A shift to five-minute settlement before then would potentially mean reopening these contracts. Therefore, the longer the transition period, the lower the overall costs will be as some longer terms contracts start to end. . As will be discussed later, ERM Power has identified other costs that could be reduced through a longer transition period.

**Question 9 – Effects of a reduction in cap contracts**

- a) To what extent would contract market liquidity be affected by a move to five minute settlement, as distinct from other pressures on liquidity?
- b) How would the contract markets adapt to a move to five minute settlement?
  - i) To what extent would new types of hedge cover emerge?
  - ii) To what extent would existing generators develop new operating strategies to underpin hedge contracts?
  - iii) To what extent would new generation plant be able to provide hedge contracts?

One of ERM Power’s greatest concerns about the five-minute settlement rule change is how the change in settlement would affect contract markets. Contract markets are used by retailers and generators to manage the risks of volatility in the spot market. Generators, renewable energy in particular, also use long-term power purchase agreements (PPAs) to underpin the financial viability of their projects. These tend to be long-term contracts that can last for more than a decade. Changes to settlement arrangements would potentially be classified as a disruption event leading to many contracts needing to be renegotiated.

Energy Edge’s report for the AEMC identifies that a shift to five-minute settlement would reduce the volume of cap contracts in the market. ERM Power agrees with this position and adds that the claimed 23 per cent reduction in cap volumes may be a conservative estimate. This is because of the changed economics under five minute settlement. Some gas-fired generators may decide that it is of greater economic benefit to sell their gas contracts rather than to continue to participate actively in the market.<sup>5</sup> This could further reduce the volumes of cap contracts in the market. Other generators may simply determine that selling cap contracts is too risky if they are unable to generate electricity within five minutes.

Furthermore, we consider that there is also a strong case that volumes of swap contracts would also decline under five-minute settlement. This is due to the added risks that arise for baseload generators in the event of a partial load rejection or generating unit trip. Under the present 30 minute settlement, if a generator reduces load or trips, it will rebid other units in order to cover as much of its swap contract volume as possible in that half hour period. Failure to do so would result in a significant financial loss as it has sold more swap contracts than it is generating. Under a five-minute market, these risks are increased. If a generator does trip, then it is impossible to rebid other on-line or off-line fast-start standby plant to meet its contracts within that five-minute period. A reasonable and likely risk mitigation strategy is therefore to reduce the volume of swap contracts it sells into the market.

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<sup>5</sup> ERM analysis suggests that this may already be occurring in Queensland and South Australia

Due to the higher risk of volatility, retailers, particularly small retailers that are not vertically integrated, are likely to seek more swap and cap contracts in order to manage the risks of this volatility. Yet, with a reduction in the volume of cap and swap contracts available, the increased demand and reduced supply would be expected to result in higher hedging costs for retailers. These higher prices hedges will be passed through to consumers through higher retail prices. The other option for new entrants or second-tier retailers would be to reduce their contracting and take a greater exposure to the spot market. However, greater exposure to the spot market and its volatility also increases risks on electricity retailers and the system as a whole through the increased risk of default and subsequent Retailer of Last Resort events. This risk would need to be covered by higher prices for consumers making it more difficult for smaller retailers to compete against larger vertically-integrated businesses.

Consequently, five-minute settlement, and the contracting risks described above, may act as a barrier to competition. Second tier retailers and new entrants who are not vertically integrated may find it difficult to compete against their larger, vertically integrated competitors. ERM Power believes that the AEMC must recognise the potential for this rule change to lead to declining competition in the retail market and that such an outcome would not be in the best interests of consumers. A strong, liquid contract market is essential to ensuring that retailers and generators are able to manage risks. At this stage, it is unclear that battery technology and other fast-start technologies will be able to supply sufficient volumes of contracts – both swaps and caps – into the secondary market. ERM Power recommends the AEMC wait until new sources of contracts are available to the market, before implementing this rule change.

**Question 10 – IT System requirements**

- a) What are the costs, synergies and risks involved in upgrading IT systems to accommodate five minute settlement?
- b) What timeframes are required to upgrade IT systems?

ERM Power’s experience as a retailer through our retail arm, ERM Business Energy, allows us to provide some indication of the scale of change and costs required in order to facilitate five-minute settlement.

ERM Power’s IT systems, and likely those of all others in the NEM, are based around existing 30 minute settlement. Existing systems would therefore need to be updated in order to process and manage the increase in data streams and changing forecasting arrangements. We would also need to produce new contract terms, new pricing structures, update our online customer portals and develop new material for customers to explain these changes. This would be a costly, multi-year project. We are currently trying to quantify the costs and will provide the AEMC with more details on costs in advance of the release of the draft determination.

ERM Power has an additional concern about the AEMC’s proposed two-stage transition of three years for large loads (Type 1-3 meters) and a further two years for smaller load (Type 4 and 5 meters). This two-stage transition would in fact add to the costs and complexity of adjusting systems to new settlement timing. We would need to build, test and implement one new IT system for five-minute settlement, while also adjusting our existing IT system to remove the load being settled on a five minute basis, while keeping load settled on a 30 minute basis. Other retailers and AEMO will likely face similar challenges. The AEMC’s proposed approach would lead to higher costs and greater risks than if there were a single transition period.

If this rule change is truly in the long-term interests of consumers, as the AEMC must believe it is to make the rule change, then a relatively small delay, which would help avoid some costs, should make little difference in how the benefits will arise over the long term. Based on the timing proposed by the AEMC, ERM Power considers that a single five-year period would lower the costs of upgrading IT systems.

The recent history of changes to retailers' billing systems shows that the transition to new billing systems can lead to problems. To the extent that this leads to erroneous bills or delays, this can undermine confidence in the retail market. Retailers are also in the process of implementing major changes to systems as part of Power of Choice reforms. Consequently, care must be taken that a major change like five minute settlement is not rushed through and that retailers are given adequate time to develop, test and implement new systems.

#### **Question 11 – Costs and Transition**

a) Are there any further categories of costs that would be incurred if five minute settlement was adopted?

b) How suitable is the proposed two-stage transition period to implement five minute settlement? Do you consider there to be a more preferable approach to a transition period such as alternative timeframes?

c) What are the detailed benefits, costs and risks of the proposed two-stage transition to five minute settlement on:

i) existing contract arrangements?

ii) metering requirements?

iii) IT system requirements?

d) Are there any other practical aspects of implementing five minute settlement that should be considered?

As highlighted previously, ERM Power has identified costs relating to the renegotiation of existing contractual arrangements and changing IT systems to accommodate new settlement timing. These costs, which may not be precisely accurate, are at least possible to estimate with some degree of clarity.

What is less clear, and has not been analysed by the AEMC as part of this process, is how the possibility of more volatility in the spot market and a lower volume of products in contract markets will influence retail electricity prices. We have already discussed the prospect for this to arise in our response to Question 9. To restate this simply, a reduction in hedge products would lead to more exposure to the risk of volatility in the spot market and as such, higher returns will be required. Alternatively, the increased demand for hedge products, combined with the lower volume available would increase the cost of hedging.

These price increases could also make it more difficult for second tier retailers and new entrants to compete with the large, vertically-integrated gentailers. Consequently, this may reduce competition in the retail market which would likely lead to poor outcomes for consumers. All these costs are difficult to estimate. The possibility of these outcomes occurring should not be ignored by the AEMC.

In considering other costs that would arise as a result of implementing this rule change, the AEMC must be mindful of the costs of installing the new kinds of generation technology needed to respond within 5 minutes. This would be expected to include battery storage systems, fast-start gas turbines, and other options such as diesel generators or pump hydro. Suggestions have also been made that existing generators incapable of starting within 5 minutes could install batteries to dispatch into the grid until the existing generator is synchronised with the grid. These options all involve substantial upfront capital costs as well as ongoing maintenance costs. These costs will come through in terms of generators' bids into the market, potentially leading to higher generation costs.

Any potential benefits from this rule change are similarly difficult to estimate. Aligning dispatch and settlement timing may produce a more efficient market, but this does not necessarily mean that there will be clear or substantial benefits in the form of lower prices. Price spikes in the last 5 minutes of the existing settlement period, which was the problem identified by Sun Metals in its rule change request, are now rarer following the implementation of the 'Bidding in Good Faith' rule change.

Finally, ERM Power believes that the proposed two-stage implementation period will actually add to risks, complexity and costs. Retailers will need to modify existing IT systems as well as building a new system in order to cater to both 5-minute and 30-minute settlement simultaneously. Allowing for a single transition period of five years would allow for more time for businesses to develop, test and implement new systems and reduce costs and risks for consumers.

To make a rule change, the AEMC must be confident that it will be in the long-term interests of consumers. If this rule change is truly in the long-term interests of consumers, then a relatively small delay should make little difference in how the benefits will accrue over the long term.

Even a five-year transition would not negate the cost impacts or risks relating to security and reliability already discussed. Timing is not the issue. ERM Power believes that the market must be ready to move to five-minute settlement without increasing costs substantially or placing undue risks to reliability or security. A better approach is for the AEMC to monitor the wholesale and contract markets and only implement the rule change once certain conditions have been met. The kinds of conditions that ERM Power has identified as necessary include:

- The development of new sources of cap contracts;
- Sufficient quantity of generation capable of dispatching from rest within 5 minutes in each NEM region;
- Introducing availability payments for fast-start plant able to generate for extended periods of time (e.g. greater than 4 hours);
- Changes to the thresholds for non-scheduled generation; and
- Arrangements for scheduling the dispatch of aggregated battery storage are in place.