AUSTRALIAN ENERGY COUNCIL

Ben Noone
Australian Energy Market Commission
PO Box A2449
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17th October 2017

Submitted online to: http://aemc.gov.au/Rule-Changes/Five-Minute-Settlement

Dear Mr Noone,

Five Minute Settlement
Reference: ERC0201

The Australian Energy Council (the "**Energy Council**") welcomes the opportunity to make a submission in response to the Australian Energy Market Commission's ("**AEMC**'s") *Five Minute Settlement Draft Determination*.

The Energy Council is the industry body representing 21 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate the overwhelming majority of electricity in Australia and sell gas and electricity to over ten million homes and businesses.

Introduction

The AEMC has recommended a more preferable rule change be made to alter the basis of the National Electricity Market ("**NEM**") from thirty minute settlement to five minute settlement. While the Energy Council is supportive of the theory justifying the alignment of dispatch intervals and settlement intervals, as previously articulated in our submissions, we have reservations that the proposed rule change satisfies the National Electricity Objective when the tangible expected costs of implementation are considered against the anticipated hypothetical benefits.

Many of these reservations are borne out in the report the Energy Council had commissioned by Seed Consulting, *Five Minute Settlement: Threshold Conditions*, which is attached to this submission.

Discussion

The Draft Determination addresses many of the issues raised by stakeholders in their submissions in relation to the Directions Paper, however the Energy Council believes it is worth focusing on the impact on the electricity contracts market.

The Energy Council appreciates the analysis which the AEMC has conducted into the electricity contracts market, but suggests that the examples provided in Section 4.2.2 "Impact of increased intrinsic value of caps" using the ACT and south-east Queensland are not appropriate when considering the future configuration of the NEM with increased variable renewable energy penetration. Instead the Energy Council believes the AEMC should have considered available SA data in more detail to draw its conclusions.

The Draft Determination reports[1] that the historical difference in the intrinsic value of caps with five minute settlement is in the order of 56% for SA, according to the commissioned Energy Edge analysis, corrected by the AEMC. This difference in the intrinsic value of caps is based on the historical running of plant during the period January 2015 to March 2017. Since that time Hazelwood Power Station (1,600MW) has closed, therefore the ability of large-scale plant, which is generally online at the time of a five-minute price spike, to respond has materially diminished, due to higher levels of dispatch and reduced capacity to increase output. With variable renewable energy taking up an increasing proportion of the generation mix across the NEM, and

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[1] p.56

the planned retirement of additional firm generating capacity, it is expected that the ability of remaining conventional generation to respond and "defend" five minute cap products will be reduced, and due to the changed economic conditions, traditional peaking-type generators will decide to withdraw from the market, particularly if their start-up costs and cost of fuel for their minimum run times exceeds their expected returns from responding to a needle peak and having to run for some period of time after the high price has subsided, to fulfil plant minimum run time requirements. This will have the effect of increasing wholesale market costs, which will ultimately flow through to consumers.

The AEMC dismisses the "cold start" strategy suggested by Snowy Hydro and Marsden Jacobs as inapplicable, refuting the claim that "price spikes are generally not unexpected"[2], yet the Draft Determination cites the Energy Edge and Russ Skelton & Associates reports as identifying that contiguous dispatch intervals at prices above $300 have been uncommon. At Table 4.5 the AEMC's analysis shows that most states have five minute prices greater than $1,000/MWh at times when reasonably expected – except for South Australia. The South Australian data shows that price spikes occur only 52% of the time when demand is greater than 80% of the quarterly maximum, and only 38% of the price spikes occur in summer. The AEMC concludes, "South Australia appears to be more unpredictable using these metrics, which may be due to the relatively high penetration of wind and solar generation, as well as interconnector limits and outages". Rather than undermining the claim that "price spikes are generally not expected", the Energy Council believes this confirms the claim, particularly as the NEM is changing to include higher penetration of variable wind and solar generation.

Following on from this, the Draft Determination provides Energy Edge's historical analysis, and concludes that "peaking generators are often already operating at a high level of output … and are unlikely to be offline"[3]. While this statement may appear true for the NSW and Queensland generators analysed, it's clear from Figure 4.8 "Operating level at start of five minute intervals with prices >$1,000" that this statement is not the case for South Australia, which is the model for the NEM in the future. Further to this, analysis of South Australian five minute Regional Reference Price ("**RRP**") data for the period 1st September 2016 to 25th September 2017 shows a RRP greater than $1,000 is preceded by a RRP greater than $500 for only 60% of dispatch intervals, indicating that for 40% of the time existing peaking plant would be facing the "cold start" scenario. In addition, the AEMC analysis does not consider the likely behaviour of peaking generators in seeking to turn off once forecasts of needle peaks have passed and prices have subsided, in the interests of conserving fuel and maintaining investor returns, and the impact this may have on the recurrence of price events. Therefore the Energy Council believes that its expectation holds true that existing peaking generators, which are technically unable to respond within five minutes, will withdraw from the market due to their inability to respond to needle peaks. Again, withdrawal of generation will increase wholesale market prices and increase costs for consumers.

The Draft Determination then goes on to say, at page 66, that alternative sources of cap contracts "would involve changes to risk management policies and physical infrastructure and *may require multiple years to implement*" [emphasis added]. The Energy Council subscribes to this view and strongly believes that the transition period of three years and seven months mooted is insufficient for the alternative options suggested in the Draft Determination to be implemented.

These views are borne out in the attached Seed Consulting Report, which found that:

- The potential reduction in caps currently provided for the management of retailers' risk as a result of exiting peaking generator capacity is materially larger than the estimate prepared for the AEMC, in the order of 1,600MW (excluding vertically integrated portfolios), a reduction in total traded cap market liquidity by around 23% in the mainland jurisdictions of the NEM.
- If the affected generation capacity were to withdraw from the market, available peak capacity could be reduced by between 2,100 and 2,900MW, and there would be a corresponding reduction in energy provided to the wholesale market, including during high demand periods.
- The potential negative impact on retail competition is also larger than estimates prepared for the AEMC, and would be largest on smaller retailers without the capacity – financial or a sufficiently large customer

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[3] p.63

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base – to finance the construction of their own internal hedges. South Australian retailers would also be materially affected, because the existing level of liquidity in financial products is so low that any further reduction in liquidity could be expected to have a material effect on market competitiveness.

- This reduction in competition would lead to higher prices for consumers, particularly for residential and weather-sensitive small commercial and industrial customers, as the price of cap contracts would increase, and competition in both the cap market and more generally would be reduced. (As an example, from 30th June 2016 to 26th September 2017 the Victorian Q1 2018 cap price increased from $9.50 to $35.25, a 271% increase since Hazelwood Power Station's closure, and significantly greater than the corresponding flat swap price change over the same period, which increased 156%. This highlights the increasing influence cap prices have on swap prices and in turn, hedging costs for retailers – which are passed on to consumers.)
- Of the AEMC's candidates for near term replacements to exiting open cycle gas turbines and other generation, more flexible gas-fired generators (aero derivative engines of the type to be installed in South Australia) are the only candidate capable of providing some replacement capacity over a three year transition period, assuming investors are willing to underwrite the investment, which is expected to be $600 million or more. (It is worth noting that even these faster starting generators are unable to provide greater than 21% of nameplate capacity across a five minute dispatch interval unless the generating unit is already in-service at the start of the dispatch interval, and this will therefore restrict the level of contracting offered to the market.)
- Cap prices could be expected to increase for two reasons: the new peaking generation configuration will either bear more risk in defending sold caps or restrict the level of contracting offered compared with that under 30 minute settlement; and, since on a MW for MW basis providing caps will be dearer, investors will want to recover their additional capital.
- Some combination of rapidly cycling and larger storage batteries could, in theory, replace exiting peaking generation capacity, albeit for limited time periods over a three year transition period. In practice, however, batteries are unlikely to be installed during the proposed transition period without significant subsidies.
- More automated demand response and behind-the-meter aggregation are, at best, immature technologies and will require a willingness on the part of consumers to supply on an ongoing basis. The level to which some processes will be able to respond to reduce load instantaneously, and thus actually receive an economic benefit under five minute settlement, is also unclear. Therefore the extent to which they are capable of replacing exiting firm capacity peaking generation is unknown.

The Energy Council is also strongly of the view that the AEMC's position in the Draft Determination that a transition period of three years and seven months is sufficient has failed to adequately consider the operational timeline that affects market participants, particularly retailers. Market participants must ensure they have available sufficient levels of customer data at a five minute level in order to make contracting decisions to manage forward market risk. The Energy Council notes that Section 7.3.2 "Contract Market Requirements" considers only the length of current forward trading contracts that market participants have in place, and does not take into account the lead time required by participants to support executing contracts in forward markets.

As a function of retailers providing contract terms of two to three years to customers, participants in forward contract markets generally concurrently contract the same two to three years forward to manage the risk of providing price certainty for these customers. This means that, based on the AEMC's draft position of a three year and seven month transition period, in order to effectively manage this market risk, forward contracts that will ultimately settle at a five minute level will be sought to be transacted by participants up to three years in advance of when they will be settled. For example, if a retailer were to contract a customer on 1st December 2018 for a term of three years from 1st January 2019 through to December 2021, a portion of this forward position would generally need to be contracted in December 2018 with forward contracts that will settle on five minute data. Inherent in executing contracts that settle at a five minute level is the requirement by traders to have sufficient load forecasts at the five minute level when forward contracts are executed, as opposed to when they will settle in the future. Such forecasts require, at a minimum, 6 to 12 months' historical data at a five minute level to support the management of forward market risk without the application of load risk premiums. Applying this to the above example, where a retailer contracts a customer in December 2018 for a three year term, for a retailer to have sufficient consumption history for a customer at a five minute level to manage forward market risk, not only would a customer's meter need to be capable of recording five minute data a minimum six months prior to 1st December 2018 (i.e. 1st June 2018) but the retailer would also need to have upgraded IT systems for trading, risk management, data collection and reporting by 1st June 2018 to support forecasting, trading and risk management activities related to forward contracts that will settle after the

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proposed start date of five minute settlement. The Energy Council strongly believes that the implementation of significant IT system upgrades for forecasting, trading, data collation and risk management activities in this timeframe is beyond the capacity of participants to reasonably achieve.

The Energy Council believes that in proposing a start date of 1st July 2021 the AEMC has focused on assessing metering and IT system implementation timeframes solely on the settlement date of forward contracts and has failed to consider the operational processes of participants in the forward contract markets.

This is further reinforced by the development timetable proposed by the AEMC in the Draft Determination. While the transition is scheduled to occur in three years and seven months, this time needs to include the development of relevant data models, file formats, guidelines and other processes by the Australian Energy Market Operator ("**AEMO**") which are only scheduled to be complete by 1st December 2020[4]. This only leaves seven months for stakeholders to finalise their system changes before the implementation date. It is expected that many market participants will not commence systems development until AEMO's processes are substantially complete, in order to mitigate the risk of further system changes, and their associated costs. Assuming proactive market participants commence work a few months before AEMO's processes are finalised, this still leaves only a maximum of twelve months before implementation, a period which is required to include system testing, corrections, reconciliation, user acceptance testing and parallel running in addition to the fundamental system development.

In a similar way, the proposed Clause 11.100.4 requires that from 1st December 2018 "all new and replacement metering installations must be capable of recording and providing, and configured to record and provide, trading interval energy data". The implication of this proposed rule change is that metering coordinators' systems will need to be capable of receiving and aggregating five minute data from 1st December 2018 – a substantial change which is reliant *inter alia* upon agreement between stakeholders on metering data formats.

All the proposed changes are dependent upon AEMO's involvement, a role which the Energy Council believes sits uneasily within AEMO's statutory functions as set out in Part 5 Division 1 Clause 49 of the *National Electricity Law*. In addition, participation by a range of stakeholders and IT contractors will be key to a successful transition. The proposed rules provide no latitude for the timetable to be varied should significant issues be identified during implementation by AEMO or any of the parties involved. To counter this, the Energy Council suggests that any final rule needs to include regular market readiness tests to ensure that the transition goes smoothly and all parties are adequately prepared.

Further Detailed Comments

With the proposed shortening of the settlement period, AEMO's forecasting will become increasingly important. Therefore the suggested rule changes should make allowance for longer forecast periods and increased review of forecasting accuracy. Specifically,

- in relation to the proposed Clause 3.8.20(b), the five minute resolution for pre-dispatch should extend to three hours rather than one hour;
- consequential changes should be made to Clause 3.8.20(a) to reflect the limited time for which the five minute pre-dispatch schedule will be made available;
- given the importance that the accuracy of the pre-dispatch schedule will have for the ongoing operations of the market, the Energy Council recommends that there be an additional Clause 3.8.20(l), which places formal obligations on AEMO to monitor and report weekly on the accuracy of the demand and intermittent generation forecasts;
- in Clauses 3.12.2 and 3.15.7B, the proposed changes are to reduce the thresholds from \$5,000 to \$1,000. Given the proposed settlement period is one-sixth of its previous value, the Energy Council would argue that the thresholds should be one-sixth of \$5,000 as well;
- in Clause 3.13.4(h), since market operations in the hour before dispatch are critical, it would be reasonable for the sensitivity published to be at the five minute resolution, and be for the hour before dispatch occurs; and

[4] Proposed Clauses 11.100.2 and 11.100.5

- in relation to the Australian Energy Regulator's monitoring of variations between forecast and actual prices (Clause 3.13.7), paragraph (d)(1) should include consideration of changes in AEMO's forecasts of regional demand and changes in AEMO's forecasts of intermittent generation.

Conclusion

In conclusion, the Energy Council believes it is important for the AEMC to consider the changing nature of the NEM in assessing the likely outcomes from the proposed rule change. As the proportion of variable renewable energy increases across all the NEM states, until technologies develop and the contract market changes, there will be significant wholesale price effects which will ultimately lead to increased costs being passed on to consumers. At the same time, the major IT changes, which will need the expertise of a limited pool of developers, will affect most areas of generators' and retailers' operations. In addition, the timetable for implementation will be dependent upon procedures developed by AEMO, which means that much of the work needed to be undertaken will not be able to be commenced for some time. It's clear to the Energy Council that a change of the magnitude proposed needs a <u>significantly</u> longer transition period than three years and seven months, and furthermore the Energy Council questions whether the proposed change should be implemented at all.

Any questions about this submission should be addressed to the writer, by e-mail to Duncan.MacKinnon@energycouncil.com.au or by telephone on (03) 9205 3103.

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