

Rule Change Notice: Implementation of 30-Minute Balancing Gate Closure (RC_2017_02)

This notice is given under clause 2.5.7 of the Wholesale Electricity Market Rules (Market Rules).

Submitter: Liz Aitken, Perth Energy

Date submitted: 4 April 2017

The Rule Change Proposal

Perth Energy's Rule Change Proposal seeks to reduce the length of the Balancing Gate Closure period from two hours to no more than 30 minutes.

Perth Energy suggests that increased participation in the Wholesale Electricity Market (WEM), combined with growth in the WA energy sector, has led to more dynamic market conditions. As a result, Perth Energy considers the current two-hour Balancing Gate Closure is no longer sufficient to maintain an efficient and equitable market, as load forecasts have been seen to adjust dramatically (in some cases by over 400 MW) in the space of two hours. This results in inaccurate pricing signals which can lead to a less responsive and competitive market.

Perth Energy considers that moving the Balancing Gate Closure deadline to 30 minutes before the start of a Trading Interval would give Market Participants greater opportunity to respond to forecast changes and bid as accurately as possible. While shortening the time between gate closure and trading will not improve the quality of the forecast itself, Perth Energy expects the change would reduce the margin for error, and would be a practical and inexpensive first step to improve the economic efficiency of the WEM.

Appendix 1 contains the Rule Change Proposal and gives complete information about:

- the proposed amendments to the Market Rules;
- relevant references to the Market Rules and any proposed specific amendments to those clauses; and
- the submitter's description of how the proposed amendments would allow the Market Rules to better address the Wholesale Market Objectives.

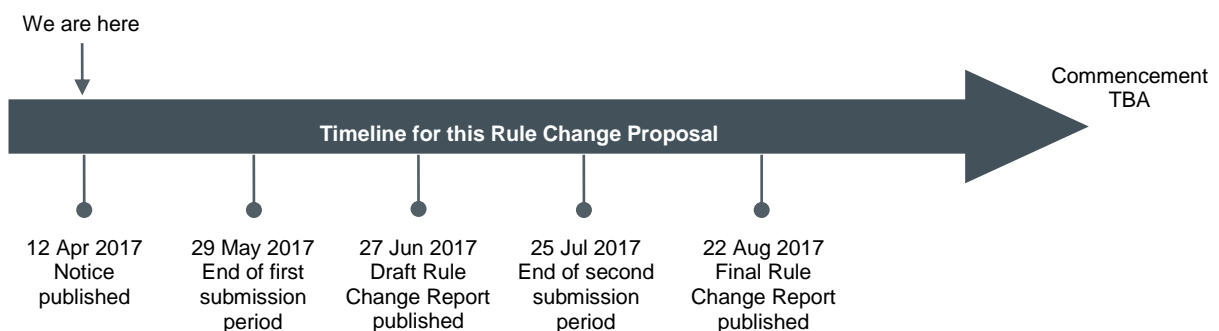
Decision to progress the Rule Change Proposal

The Rule Change Panel has decided to progress this Rule Change Proposal on the basis that its preliminary assessment indicated that the proposal is consistent with the Wholesale Market Objectives.

Timeline

This Rule Change Proposal will be progressed using the Standard Rule Change Process, described in section 2.7 of the Market Rules.

The projected timelines for progressing this proposal are:



Call for submissions

The Rule Change Panel invites interested stakeholders to make submissions on this Rule Change Proposal. The submission period is 30 Business Days from the Rule Change Notice publication date. Submissions must be delivered to the RCP Secretariat by **5:00 PM** on **Monday, 29 May 2017**.

The Rule Change Panel prefers to receive submissions by email, using the submission form available at: <https://www.erawa.com.au/rule-change-panel/make-a-rule-change-submission> sent to rcp.secretariat@rcpwa.com.au.

Submissions may also be sent to the Rule Change Panel by post, addressed to:

Rule Change Panel

Attn: Executive Officer
C/o Economic Regulation Authority
PO Box 8469
PERTH BC WA 6849

Wholesale Electricity Market Rule Change Proposal

Rule Change Proposal ID: RC_2017_02
Date received: 4 April 2017

Change requested by:

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Date submitted:	4 April 2017
Urgency:	High
Rule Change Proposal title:	Implementation of 30-Minute Balancing Gate Closure
Market Rule(s) affected:	Clause 7A.1.16 of the Market Rules

Introduction

Clause 2.5.1 of the Wholesale Electricity Market (WEM) Rules (Market Rules) provides that any person may make a Rule Change Proposal by completing a Rule Change Proposal form that must be submitted to the Rule Change Panel.

This Rule Change Proposal can be sent to:

Email to: rcp.secretariat@rcpwa.com.au

Post to: Rule Change Panel
 Attn: Executive Officer
 C/o Economic Regulation Authority
 PO Box 8469
 PERTH BC WA 6849

The Rule Change Panel will assess the proposal and, within 5 Business Days of receiving this Rule Change Proposal form, will notify you whether the Rule Change Proposal will be further progressed.

In order for the proposal to be progressed, all fields below must be completed and the change proposal must explain how it will enable the Market Rules to better contribute to the achievement of the Wholesale Market Objectives.

The objectives of the market are:

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;
- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;
- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;
- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and
- (e) to encourage the taking of measures to manage the amount of electricity used and when it is used.

Details of the Proposed Rule Change

1. Describe the concern with the existing Market Rules that is to be addressed by the proposed rule change:

Summary of issue

Perth Energy proposes clause 7A.1.16 of the Market Rules be amended to change the Balancing Gate Closure from the current six-to-two-hour window, to no more than 30 minutes before the relevant Trading Interval.

Increased participation in the Wholesale Electricity Market (**WEM**), combined with growth in the WA energy sector, has led to more dynamic market conditions. As a result, Perth Energy considers the current two-hour Balancing Gate Closure, is no longer sufficient to maintain an efficient and equitable market, as load forecasts have been seen to adjust dramatically in the two hours between finalising Balancing Submissions and commencing the Trading Interval.

Accurately forecasting demand is a prerequisite for an economically efficient market, and effective price signals. Though Perth Energy recognises the market operator has made improvements in load forecast accuracy¹, the dynamism of the WEM means the load forecast can vary by more than 400 MW² in the space of two hours. Such variation results in inaccurate price signals, which can lead to a less responsive and competitive market.

Perth Energy understands work has been undertaken by the Australian Energy Market Operator (**AEMO**) to improve load forecast accuracy over the last few years, however, further improvement is likely to be a lengthy and expensive process. Moving the Balancing Gate Closure to 30 minutes before a Trading Interval, will provide Market Participants greater opportunity to respond to forecast changes and bid as accurately as possible. While shortening the time between gate closure and trading will not improve the forecast itself, it reduces the margin for error, and is a practical and inexpensive first step to improve the economic efficiency of the market.

It should be noted that shortening the Balancing Gate Closure was prioritised as part of the

¹ See Rule Change Proposal: Transparency of Outage Information (RC_2011_12).

² Monitoring of Trading Intervals by Perth Energy between 14 January 2017 and 16 March 2017 found the load forecast varied upwards by a maximum of +294 MW and downwards by a maximum of -428 MW.

Independent Market Operator (**IMO**)'s 2013 Market Rules Evolution Plan³, and received widespread support from Market Participants.

Further background to this proposed rule change is provided below.

Background and context

Under clause 7A.1.16 of the Market Rules, AEMO *must determine a point in time immediately before the commencement of a Trading Interval for the purpose of setting the Balancing Gate Closure*. Balancing Gate Closure is the point at which Market Participants are no longer permitted to update bids or offers submitted with respect to that Trading Interval, except on limited specified grounds⁴.

The Market Rules currently provide an upper and lower bound during which Balancing Gate Closure must occur. Clause 7A.1.16 of the Market Rules currently requires Balancing Gate Closure to be *no shorter than two hours and no longer than six hours before the commencement of a Trading Interval and be published on the Market Web Site* by AEMO⁵.

The two-to-six hour lower and upper bounds are a legacy of the transition from the Short Term Energy Market (**STEM**) and have been in place since the Balancing Market was introduced. The introduction of the Balancing Market in July 2012⁶ meant Market Participants and System Management (now AEMO) were moving from day-ahead trading under the STEM, to a much shorter bidding and dispatch process. At the time, System Management raised concerns that the reduced timelines may cause difficulties for system controllers, therefore it was considered prudent to have a transitional Balancing Gate Closure of six hours for the first six months of the new Balancing Market operation.

After a successful transition period, in December 2012 the Balancing Gate Closure was reduced to two hours. As a precaution, clause 7A.1.17 of the Market Rules was included in the Market Rules, which allows the market operator to change the Balancing Gate period:

AEMO may from time to time, change the point in time determined under clause 7A.1.16 by publishing the new point in time on the Market Web Site and specifying the date from which the new point in time is to take effect, which shall be no earlier than 2 months from the date of publication.

Clause 7A.1.17 was designed as a safeguard to allow the Balancing Gate period to increase should System Management or Market Participants experience insurmountable difficulties with a two-hour Balancing Gate Closure.

After more than four years of operation, Balancing Gate Closure remains at two hours before the relevant Trading Interval. Market Participants and System Management have demonstrated capability to operate with a small bidding window in a near real-time market. Therefore, it is reasonable to consider shortening the period of time between closure and trading further.

³ Issue 3 was the 'Transition to half hour Balancing Gate Closure'.

⁴ Including for example where the information provided within a Balancing Submission does not accurately reflect internal or external constraints, a reasonable expectation of the capability of a Facility, or the price, or where a Market Participant receives an Operating Instruction.

⁵ This information is currently published at: <http://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Participant-information/Current-participants/Balancing-market-participation>.

⁶ See the Rule Change Proposal: Competitive Balancing and Load Following Market (RC_2011_10).

Issue

The current Balancing Gate Closure arrangement means the information used by Market Participants to finalise Balancing Submissions is at least two hours old. Though two hours between gate closure and trading was appropriate during the formation of the Balancing Market, the market has become increasingly dynamic. In particular, the increased percentage of Non-Scheduled Generation and small-scale solar means that load has the ability to change significantly in real-time.

Perth Energy has observed increased volatility in load forecasts during this two hour window. For example, between 14 January 2017 and 16 March 2017⁷, in the two hours between Balancing Gate Closure and the commencement of the relevant Trading Interval:

- the load forecast decreased on average by 8MW over the period for which data was collected (2880 trading intervals) however there was an increase 49.4% of the time, and a decrease 50.5% of the time;
- decreased on average by 8 MW over the 2,880 Trading Intervals;
- at the maximum, the load forecast varied by +294 MW and -428 MW;
- where the forecast increased after Balancing Gate Closure, the increase was on average 56 MW, and was over +100 MW 8% of the time; and
- where the forecast decreased after Balancing Gate Closure, the decrease was on average 74 MW, and was over -100 MW 12% of the time.

Perth Energy also observed variance in price information over the same period. It found that in the two hours between gate closure and trading:

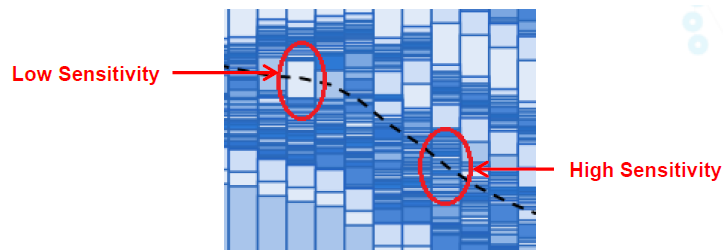
- the price forecast increased on average by \$1.81/MWh over the 2,880 Trading Intervals;
- at the maximum, the price forecast varied by +\$147.76/MWh and -\$107.26/MWh;
- where the forecast increased after Balancing Gate Closure, the increase was on average \$17.28/MWh or 29%, and 10% of the time was over 33%; and
- where the forecast decreased after Balancing Gate Closure, the decrease was on average \$12.39/MWh or -19%, and 5% of the time was over 33%.

These variances in price signal show the impact of load forecast accuracy on price signals, and ultimately the WEM overall.

The impact of the load forecast error on the price signal has increased significantly due to the recent heightened sensitivity in the Balancing Merit Order. Perth Energy notes that the frequency of large price-quantity pair blocks in the Balancing Merit Order has diminished, and has been replaced with several smaller blocks. This change increases the sensitivity to variation in the load forecast, which ultimately affects prices. Figure 1 illustrates recent changes in the Balancing Merit Order.

⁷ The data set does not include information missing from the Trading Intervals 12:00 on 2 March 2017 to 11:30 on 3 March 2017.

Figure 1: Example of changes in the sensitivity of the Balancing Merit Order



Accurate price signals are crucial for an effective market. They increase competition, which reduces overall prices over time and improves market efficiency. This is because where a Market Participant expects the Balancing Price to be close to the price at which it is prepared to run a Facility, it is likely to make a slightly lower offer to improve the chances of being dispatched.

The more confident a Market Participant is in the load forecast, the more confident it will be in predicting the Balancing Price, and the more competitive it will become. The greater competition among Market Participants for dispatch, the lower prices become, and the lower the expected Balancing Price will be, and so on. The current two hour gate closure means that Market Participants are unable to compete by responding to price signals, and this ultimately increases the cost of electricity for consumers.

Inaccurate price signals result in inefficient market outcomes. Consistently inaccurate load forecasts that flow through to a highly sensitive Balancing Merit Order result in large movements in Balancing Price outcomes. The total dollar impact to consumers of the inability for generators to respond to price signals for the 60 day period from 14 January to 16 March⁸ was \$8,901,595⁹. Extrapolated over 12 months this unmitigated market risk equates to a cost of \$53 million.

Proposed change

The nearer to the relevant Trading Interval, the lower the likelihood that load forecasts will vary, and the more likely that Balancing Price outcomes will be accurate. Perth Energy therefore proposes to amend clause 7A.1.16 of the Market Rules to change the existing transitional Balancing Gate Closure:

- by amending the upper bound of six hours to 30 minutes prior to the relevant Trading Interval; and
- removing the lower bound altogether.

Perth Energy recommends the upper bound of 30 minutes be hard-coded into the Market Rules. Removing the lower bound will allow the Balancing Gate Closure to be further shortened in the future as forecast accuracy and technical capabilities improve. Note Perth Energy proposes clause 7A.1.17 of the Market Rules be retained in its current form.

Enabling Market Participants to respond to load forecast volatility closer to the relevant Trading Interval will improve their ability to manage participation and risk in the physical markets, and thereby improve overall market efficiency.

⁸ The data set does not include information missing from the Trading Intervals 12:00 on 2 March 2017 to 11:30 on 3 March 2017.

⁹ $((\text{Final hh load} * \text{price variance}) + (\text{load variance} * \text{final hh price}))/2$

2. Explain the reason for the degree of urgency:

In 2013, shortening Balancing Gate Closure was prioritised as part of the Market Rules Evolution Plan¹⁰ and included in a broader package of improvements to the energy market. There was general support from Market Participants for this proposal, and the move to a 30-minute Balancing Gate Closure was proposed to be progressed as part of the pre Rule Change Proposal: *Enhancements to the Energy and LFAS Markets (PRC_2014_01)*.

In March 2015, the State Government's Electricity Market Review (**EMR**) moved into an implementation phase. The EMR included plans to remove Balancing Gate Closure completely and allow Market Participants to bid up to the beginning of a Trading Interval. Shortened gate closure was therefore removed from the package of changes included in PRC_2014_01 which ultimately became *Removal of Resource Plans and Dispatchable Loads (RC_2014_06)*.

A recent change of State Government means the EMR has halted and there is uncertainty around how and when it will progress.

Perth Energy supports the ultimate objective to remove Balancing Gate Closure entirely, however it recognises this will likely be a long process that would require significant consultation and investment in systems and processes. Through consultation with AEMO supported shortened gate closure, noting:

EMR reforms to energy and ancillary service markets would have delivered shorter gate closure (or potentially eliminate gate closure altogether) as part of a larger suite of reforms. Ultimately in AEMO's view, the full reform remains the preferred solution for the WEM.

Given the uncertainty around the direction of the EMR, coupled with the overwhelming support for this relatively inexpensive step and significant benefits of reducing Balancing Gate Closure to 30 minutes via a rule change, Perth Energy considers it prudent to proceed immediately.

3. Provide any proposed specific changes to particular Market Rules: (for clarity, please use the current wording of the rules and place a ~~strike through~~ where words are deleted and underline words added)

7A.1.16. With effect on and from the Trading Interval commencing at 8:00 AM on the Balancing Market Commencement Day, AEMO must determine a point in time immediately before the commencement of a Trading Interval for the purpose of setting the Balancing Gate Closure. -The point in time must be ~~no shorter than two hours and~~ no longer than ~~six hours~~ 30 minutes before the commencement of a Trading Interval and must be published on the Market Web Site.

Perth Energy notes that this clause is not a Protected Provision, Reviewable Decision or civil penalty provision under the WEM Regulations.

A number of Market Procedures may also need to be revised to ensure consistency with this proposed amendment.

¹⁰ Issue 3 was the 'Transition to half hour Balancing Gate Closure'.

4. Describe how the proposed rule change would allow the Market Rules to better address the Wholesale Market Objectives:

Perth Energy considers the proposed change will allow the Market Rules to better achieve Wholesale Market Objectives (a), (b), (c) and (d).

Wholesale Market Objective (a)

- (a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system

Shortening the Balancing Gate Closure will improve the efficiency and effectiveness of the WEM by enabling Market Participants greater ability to respond to load forecast changes and base Balancing Submissions on more reliable information. Market Participants will be able to submit cost-reflective bids in a timely manner, and better manage market exposure risks.

It should be noted that the proposed change will not be to the detriment of safe and reliable production or supply of electricity, and will likely reduce ancillary service costs due to decreased deviations between forecasts and loads. The dispatch of all Facilities will remain subject to System Management intervention for system security purposes.

Perth Energy considers this rule change will promote efficiency without compromising the safety or reliability of the system.

Wholesale Market Objective (b)

- (b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors

The proposed change will enable more active participation for those Market Participants wanting to respond to price signals in the WEM, and ultimately increase competition and reduce prices. Perth Energy notes however, that should any Market Participant not want to or be unable to respond in the shorter timeframe, there is no obligation to do so.

Greater transparency of information closer to the relevant Trading Interval will provide greater opportunities for participation for generators, in particular for those outside of the Synergy portfolio, which would otherwise be dispatched by System Management in real-time in their place. Perth Energy therefore considers that this rule change will encourage further competition amongst existing generators and encourage new entrants in the WEM.

Wholesale Market Objective (c)

- (c) to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;

The longer the gap between Balancing Gate Closure and the relevant Trading Interval, the greater the likelihood that larger more traditional generation Facilities would be dispatched (e.g coal-fired generation).

Balancing Gate Closure occurring two hours prior to the relevant Trading Interval effectively reduces the likelihood of Facilities able to respond in short timeframes being dispatched to the benefit of larger, more traditional Facilities.

A 30-minute Balancing Gate Closure would require a greater proportion of smaller, more responsive Facilities (such as peaking generation) to be dispatched, therefore increasing competition and reducing discrimination against peaking generation.

Wholesale Market Objective (d)

- (d) to minimise the long-term cost of electricity supplied to customers from the South West interconnected system

Improved price signals, coupled with an ability to respond will increase participation and therefore competition in the WEM. This in turn will promote a more efficient generation mix, and drive lower prices to end-use customers.

5. Provide any identifiable costs and benefits of the change:

Benefits

The proposed change will improve the efficiency and effectiveness of the WEM by enabling Market Participants to respond to new and more accurate information.

A 30-minute Balancing Gate Closure will provide Market Participants with a greater ability to respond to load forecast changes, basing Balancing Submissions on more reliable information. This means Market Participants will be able to prepare more competitive Balancing Submissions than might otherwise be the case, and to better understand / manage risks, ultimately driving down costs for end users.

Perth Energy assessed the impact of load forecast and price variances between Balancing Gate Closure and the Trading Interval from January to March 2017. Perth Energy calculated \$3.16 million was at risk based on its Facility running at full capacity. This included:

- down-side price risk of \$1.29 million, where the load was over-forecast and Perth Energy was at risk of running at below cost; and
- potential foregone revenue of \$1.87 million, where the load was under-forecast and Perth Energy could have bid in to run economically but the price was not reflective.

In addition the total dollar impact to consumers of the inability for generators to respond to price signals for the 60 day period from 14 January to 16 March was \$8,901,595. Extrapolated over 12 months this unmitigated market risk equates to a cost of \$53 million.

Perth Energy considers this risk could have been minimized or avoided if the Balancing Gate Closure was brought closer to the relevant Trading Interval. Perth Energy believes all Market Participants would benefit from the Balancing Gate Closure change.

Market Participants will also benefit from a reduced risk of non-compliance following Balancing Gate Closure, as the window will be shorter.

Implementation costs

In March 2017 during the preparation of this Rule Change Proposal, Perth Energy engaged with AEMO and the ERA regarding the impact of this proposal on their respective systems and processes.

Clause 7A.2.10 of the Market Rules requires Market Participants to update a Balancing Submission after Balancing Gate Closure as soon as it becomes aware that any information contained within it is inaccurate. This means that the market and dispatch systems and processes that AEMO uses must already be able to accommodate Balancing Submissions after Balancing Gate Closure.

Perth Energy considers that this existing functionality should make any changes to market systems minimal. However, AEMO was unable to provide Perth Energy with an indicative cost of the proposed change in the timeframe but stated it will be able to do so during the consultation phase of the rule change process.

In previous discussions, System Management (now AEMO) indicated that the shortened Balancing Gate Closure may increase the workload of its system operators, as they will need to understand and process dispatch instructions in a shortened timeframe. However, a change in Balancing Gate Closure to 30 minutes will not require any additional forecasting from a system operations perspective as AEMO already produces forecasts every half hour.

As there is an existing ability, and requirement in some circumstances for Market Participants to amend submissions after Balancing Gate Closure, Perth Energy understands that Market Participants are unlikely to incur any additional costs as a result of the proposed change.

Perth Energy notes that the shortening of Balancing Gate Closure will increase the risk that System Management (AEMO) will need to use information from a previous Trading Interval for dispatch should a Balancing Merit Order be unavailable. However, Perth Energy considers AEMO has processes and systems already in place that will minimise the impact of this risk.

The proposed move to 30-minute Balancing Gate Closure will result in a change in compliance monitoring and reporting for the ERA. However, the ERA advised that it did not expect to incur any additional costs as a result.
