Rule Change Notice: Amending the Minimum STEM Price definition and determination (RC_2019_05)

This notice is given under clause 2.5.7 of the Market Rules.

Submitter: Andrew Everett – Synergy

Date submitted: 25 October 2019

The Rule Change Proposal

Synergy is seeking to:

- amend the definition of the Minimum STEM Price from -$1,000/MWh to a value "based on AEMO's estimate of the highest price that would induce all generators absent of non-market-related externalities to decommit";[1]
- expand the annual review process for the Maximum STEM Price and Alternative Maximum STEM Price to cover the Minimum STEM Price; and
- set the Minimum STEM Price to -$200/MWh until a new value is determined and approved through the expanded annual review process.

Synergy contends that the displacement of scheduled generation by renewable generation will soon render the Minimum STEM Price unfit for purpose; and that leaving it unchanged will result in excessive and unacceptable financial loss for Market Generators that have generating plant in service at times of low scheduled load and/or are obliged to have generating plant in service for no other reason than to provide Ancillary Services. Synergy considers these losses may have a profound impact on short-term and long-term decision making in the market, adding considerable and unnecessary cost to the system.

Synergy also argues that because the Minimum STEM Price is fixed, it is not responsive to changing technological, cost and market conditions.

Synergy suggests a transitional Minimum STEM Price of -$200/MWh to avoid adverse outcomes prior to the implementation of the proposed review methodology.

Decision to progress the Rule Change Proposal

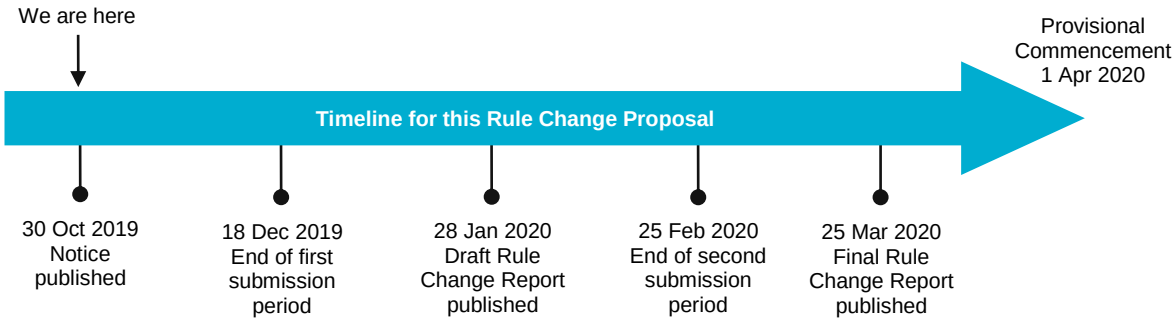
The Rule Change Panel has decided to progress this Rule Change Proposal on the basis that stakeholders should be given an opportunity to consider the Rule Change Proposal and provide submissions through the rule change process.

[1] 'Non-market-related externalities' are considerations associated with using generation plant for purposes other than for providing energy to the electricity market, e.g. steam revenue derived by a cogeneration facility.

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 timeline for progressing this proposal is:



Please note that, as published in the extension notice of 30 October 2019:

- the first submission period has been extended beyond the usual 30 Business Days to provide Market Participants with additional time to consider this proposal because Market Participants have not had an opportunity to consider or discuss this Rule Change Proposal prior to its submission; and
- the period for the preparation of the Draft Rule Change Report has been extended beyond the usual 20 Business Days to account for the Christmas period.

All other dates have been adjusted accordingly.

Call for Submissions

The Rule Change Panel invites interested stakeholders to make submissions on this Rule Change Proposal. The submission period is 35 Business Days from the Rule Change Notice publication date. Submissions must be delivered to the RCP Secretariat by **5:00 PM on Wednesday 18 December 2019**.

A special Market Advisory Committee meeting is being called for the week of 11 November 2019 to discuss this Rule Change Proposal. Details for this meeting will be disclosed through the weekly RulesWatch newsletter.

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 support@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_2019_05**
Date received: **25 October 2019**

Change requested by:

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Address:	219 ST GEORGE'S TERRACE, PERTH
Date submitted:	25 October 2019
Urgency:	1-essential
Rule Change Proposal title:	AMENDING THE 'MINIMUM STEM PRICE' DEFINITION AND DETERMINATION
Market Rule(s) affected:	Chapter 11 Glossary: 'Minimum STEM Price' definition 6.20 Energy Price Limits Clause 6.20.4 Clause 6.20.6 Clause 6.20.7

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 by:

Email to: support@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:

Issue

This Rule Change Proposal seeks to amend the definition, and determination, of the Minimum STEM Price in the WEM and advocates the establishment of a transitional price while the proposed amendments are considered and potentially implemented.

The advent of renewable generation, and associated displacement of scheduled generation, will soon render the Minimum STEM Price not fit for purpose. If unchanged, it will result in excessive and unacceptable financial loss for market generators that have generating plant remaining in service at times of low scheduled load and/or are obliged to have generating plant in service for no other reason than to provide ancillary services, as well as delivering a perverse retirement and augmentation pricing signal. These excessive losses may have a profound impact on short term and long-term decision making in the market, adding considerable and unnecessary cost to the system.

The Minimum STEM Price is currently defined in the WEM Market Rules Glossary (Chapter 11) as meaning a fixed number of "negative $1000.00 per MWh". There appears to be no justification in the WEM Market Rules for this definition. It reflects the same number that is given as the 'market price floor' in the NEM Market Rules. According to the AEMC, the purpose of having a floor price in the NEM is that it "*prevents market instability by imposing a negative limit on market prices in any trading interval, while allowing the market to clear during low demand periods. The market floor price should be set at a level that does not interfere with generators being able to differentiate themselves according to the value they place on being dispatched by bidding at negative prices during periods of excess generation.*"[1]

[1] Reliability Panel AEMC 2018, *Final Report: Reliability standard and settings review 2018*, Reference: REL0064, April 30, p36.

A fixed, arbitrary number does not provide the most efficient market outcome for the WEM according to any useful purpose of a Minimum STEM Price. In being fixed, the Minimum STEM Price is not responsive to changing technological, cost and market conditions. In being arbitrary, it does not reflect a level that explicitly relates to the cost of supply and, to the extent it differs from any such measure, it may result in adverse outcomes. For example:

- If -$1000/MWh is lower than required to incentivise decommitment by all generators absent of non-market-related externalities[2], it should have no impact on wholesale market outcomes in terms of the number of times market clearing prices are negative, the cycling costs of generators, and the ability of generators to differentiate themselves to remain dispatched and avoid paying cycling costs. The difference between -$1000/MWh and the greatest cost to decommit a generator simply adds unnecessarily (for no market or system benefit) to the financial risk to which participants are exposed.
- If -$1000/MWh is higher than required to incentivise decommitment by all generators absent of non-market-related externalities, it will limit the ability of generators to differentiate themselves through negative bids, potentially resulting in inefficient and undesirable market outcomes such as resorting to random determination of dispatch and/or generators receiving infeasible dispatch instructions.

Proposed solution

A more economically efficient, equitable and flexible approach to setting the Minimum STEM Price would be to calculate it in a manner similar in purpose to the Maximum STEM Price.

The Maximum STEM Price is calculated to be high enough (but no higher) to cover the cost of electricity generation of the most expensive plant, which is likely to be required at times of very high (peak) demand. It should be no higher than this cost to reduce the potential for prices to be driven above the cost of supply.

The Minimum STEM Price should, correspondingly, be calculated to be a negative number that is low enough (but no lower) than the price at which the generator with the greatest cost to decommit, or turn off, would be financially better off to incur the cost of shutting down its plant, rather than remaining in service and delivering at negative prices. In other words, it should represent the price just sufficient to induce all generators absent of non-market-related externalities to decommit.

Factors to include in determining a Minimum STEM Price would be:

- the cost to cycle, including start-related fuel and variable operating and maintenance costs for each generating unit;
- the minimum stable level of operation of each generating unit;
- the minimum time each generating unit must remain out of service once decommitted before recommitment is possible; and
- the expected rate of change of system load during periods of minimum demand.

[2] 'The term 'non-market-related externalities' is used to mean considerations (costs, benefits, contracts, etc) associated with using generation plant for purposes other than providing energy for the electricity market. A typical example of such an externality would be steam revenue derived by a cogeneration facility.

The AEMC also states “consideration of the market floor price should … include consideration of … costs of operation of storage, and indeed anything that bears on the ability of the market to clear during low demand periods”, and it notes that “as storage technology continues to mature … the interplay between storage and cycling of conventional generation will become increasingly important to the setting of the market floor price.[3]

It is expected that the development of an appropriate formula for the Minimum STEM Price may take an extended period of time during which it is likely the market will experience further intervals where the clearing price is at the floor. Given the urgency of the issue in terms of the unacceptable level of adverse financial impact that may arise in the meantime, it is proposed a transitional Minimum STEM Price is introduced as soon as possible.

It is considered that the application of the suggested methodology for determining the Minimum STEM Price may result in an outcome in the range of -$50/MWh to -$100MWh, although this will depend on how the factors listed above are employed. It is suggested a reasonable transitional Minimum STEM Price could be -$200/MWh as this currently appears to be the lower bound from which the price then free-falls to -$1000/MWh.

Proposed review process

According to Clause 6.20.6, the Australian Energy Market Operator (**AEMO**) must annually ***review the appropriateness*** of the value of the Maximum STEM Price and Alternative Maximum STEM Price, for approval by the Economic Regulatory Authority (ERA).

According to Clause 2.26.3, the Economic Regulation Authority (**ERA**) must ***review the methodology*** for setting the Benchmark Reserve Capacity Price and the Energy Price Limits not later than the fifth anniversary of the first Reserve Capacity Cycle and, subsequently, not later than the fifth anniversary of the completion of the preceding review.

In line with the Maximum STEM Price, the appropriateness of the Minimum STEM Price should be reviewed annually to ensure it is performing its function appropriately in the light of changing technologies, market rules and cost structures. Under Clause 2.26.3 the methodology would then be reviewed every five years, along with the other Energy Price Limits, being the Maximum STEM Price and Alternative Maximum STEM Price.

Rationale

The Maximum STEM Price allows cost recovery for generators in periods of high demand while limiting the ability of generators to ‘game’ the market and be awarded excessive infra-marginal rents. Similarly, a Minimum STEM Price set using the proposed methodology would allow all generators to fully and reasonably differentiate themselves through negative bids to remain dispatched if they choose, while also avoiding having to pay cycling costs in periods of low demand. It would also further reduce the likelihood and impact of generators with favourable bilateral trading positions pushing prices excessively low.

A Minimum STEM Price set in this manner also has the advantage over a static number of being flexible, adaptable and, if appropriately constructed, technology neutral. It is sensible to attach a review of appropriateness of the Minimum STEM Price to that of the review of the other Energy Price Limits, noting that a review of methodology already occurs for all Energy Price Limits.

A transitional Minimum STEM Price of -$200/MWh is suggested to avoid unacceptable outcomes prior to the implementation of the proposed methodology.

[3] Ibid p38.

2. Explain the reason for the degree of urgency:

It is requested that this Rule Change Proposal is managed with the 'Fast Track' process, and be classified as 'Essential' in relation to the Rule Change Panel's Framework for rule change proposal prioritisation and scheduling, as it addresses unacceptable outcomes for the WEM that will manifest by mid-2020 at the latest.

The adverse financial impact of a Minimum STEM Price of -$1000/MWh is likely to be considerable; potentially in excess of $100,000 per trading interval for scheduled generators. This would clearly escalate to an unacceptable financial outcome in the event of several intervals at the floor. These losses will have an immediate impact on short-term decision making and are likely to adversely affect market outcomes, not only in the STEM and Balancing Markets but also in the Ancillary Services markets.

The Minimum STEM Price of -$1000/MWh was set at a time when the demand for, and supply of, electricity was significantly different than it is now in terms of quantity and price across all time periods. At that stage, it was not envisaged a price floor would play a large role in the operation of the market and it is likely it was instituted as a safety mechanism to limit the possibility of unforeseen outcomes destabilising the market.

Recent years have seen a rapid increase in the amount of large-scale and small-scale renewable generation, along with the emergence of other new energy technologies, in the SWIS. This is changing the electricity generation mix, load profiles, the requirements and operation of the system for reliability and security and, accordingly, the clearing price in the Balancing Market.

The WEM is experiencing more frequent and larger negative clearing prices. Some of these negative price intervals are a normal and acceptable response of the market to changing technologies affecting demand and supply conditions. However, the current relationship between the Ancillary Services and Balancing Markets, with Ancillary Services running in advance of Balancing and Ancillary Services energy offered at the floor in the Balancing Market, creates the strong possibility of the Balancing Market clearing at the floor in periods of very low demand. This occurred on 12 October 2019 at 13:00 and 13 October 2019 at 12:00 and 13:00. Given that uptake of rooftop solar PV is expected to continue at pace, the frequency of such events can be expected to rapidly increase.

The proposed change to the Minimum STEM Price will allow generators the pricing latitude to economically and rationally (commit and) decommit their plant in every trading interval, while limiting the consequences of balancing price exposure for all market participants.

As well as providing more cost-reflective pricing signals for the temporary (entry and) exit of generation plant within trading intervals, the proposed rule change will also provide more appropriate economic pricing signals for the permanent exit of generation plant. While changing the Minimum STEM Price may not affect the frequency at which negative prices occur in the Balancing Market, to the extent that the current Minimum STEM Price of -$1000/MWh is below the most expensive plant decommitment cost (absent of non-market-related externalities), it will increase overall losses incurred by generators over time. This effect on long term pricing signals faced by generators may induce perverse augmentation and retirement decisions that result in sub-optimal outcomes for the system.

It is imperative in such a rapidly changing energy environment that, where negative prices are

likely to increase in frequency and system reliability and security is being increasingly challenged, unnecessary losses, volatility and risk are minimised and price signals are more closely related to true system costs and benefits. It is also prudent to formulate price signals that have flexibility to change with technology, cost and market conditions.

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

11. Glossary
Minimum STEM Price: Means ~~negative $1,000.00 per MWh.~~ the price determined in accordance with clause 6.20.7 (a) (iii).

6.20.4. ~~[Blank]~~The Minimum STEM Price is the value published on the Market Web Site and revised in accordance with clauses 6.20.6 and 6.20.11.

6.20.6. AEMO must annually review the appropriateness of the value of the Maximum STEM Price, ~~and~~ Alternative Maximum STEM Price and Minimum STEM Price.

6.20.7. In conducting the review required by clause 6.20.6 AEMO:

(a) may propose revised values for the following:

i. the Maximum STEM Price, where this is to be based on AEMO's estimate of the short run marginal cost of the highest cost generating works in the SWIS fuelled by natural gas and is to be calculated using the formula in paragraph (b); ~~and~~

ii. the Alternative Maximum STEM Price, where this is to be based on AEMO's estimate of the short run marginal cost of the highest cost generating works in the SWIS fuelled by distillate and is to be calculated using the formula in paragraph (b); and

iii. the Minimum STEM Price, where this is to be based on AEMO's estimate of the highest price that would induce all generators absent of non-market-related externalities to decommit.

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

(a) The proposed methodology for determining the Minimum STEM Price is based on the economics of the market and will provide appropriate price signals that will enable more efficient and cost-effective supply of electricity.

(b) Reduced incentives for generators to 'game' the market or influence perverse outcomes will enable fairer and more effective competition among participants in the SWIS.

(c) Setting a Minimum STEM Price that explicitly allows all generators to fully differentiate themselves through negative prices provides an outcome less likely to discriminate

against generation types than a fixed, indirect price that may be too high or too low and, therefore, more discriminatory to certain generators.

(d) The rule change would more appropriately protect market participants against unnecessary risk from being excessively exposed to market prices that are below the economic cost of decommitting plant, which will assist in achieving low-cost reliable electricity supply in the SWIS.

(e) Price signals that are more cost reflective will ultimately translate to more economically rational decisions throughout the whole electricity supply chain.

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

Benefits:

- Maintain the full extent of price differentiation between generators in decommitting plant within a trading interval, thus maintaining the full range of temporary exit signals for generators;
- Reduce the significant risks and costs associated with unnecessarily large and/or volatile negative prices for all market participants;
- Reduce the possibility of sub-optimal decisions around the augmentation and exit of generation plant due to uneconomically large losses incurred in the Balancing Market; and
- Reduce incentives for parties with contract cover in low demand periods to distort market outcomes.

Costs:

- Initial cost of determining a methodology for the Minimum STEM Price; and
- Ongoing review costs, in conjunction with the reviews of the appropriateness and methodology of the other energy price limits.
