



Final Rule Change Report: Full Runway Allocation of Spinning Reserve Costs (RC_2018_06)

Standard Rule Change Process

30 April 2019

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The Rule Change Panel's final decision is to accept the Rule Change Proposal in a modified form, as set out in section 8 of this Final Rule Change Report.

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The Rule Change Panel has made its decision on the basis that the Amending Rules, as amended following the first and second submission periods:

- x will remove cross-subsidies created by the current modified runway approach to allocate Spinning Reserve costs, which will remove distortions in bidding behaviour and will lead to more efficient pricing in the Balancing Market;
- x will allow the Market Rules to better achieve Wholesale Market Objectives (a), (b) and (d) and are consistent with the remaining Wholesale Market Objectives; and
- x are supported by the MAC and in submissions to the Rule Change Proposal.

Additional detail outlining the analysis behind the Rule Change Panel's decision is outlined in section 7 of this report.

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This section provides a summary of the PUO's Rule Change Proposal. Please refer to the Rule Change Panel's website for full details of the Rule Change Proposal.

The PUO's Rule Change Proposal seeks to replace the current modified runway approach for allocating Spinning Reserve costs under the Market Rules with a full runway approach.

Under the current modified runway approach, the cost of providing the Spinning Reserve Service is recovered from all generators synchronised to the system that have an applicable capacity¹ of over 10 MW in a given Trading Interval. Generators with an applicable capacity of less than or equal to 10 MW do not contribute towards Spinning Reserve costs. The costs for the Spinning Reserve Service are allocated based on a set o

generators to offer more of their applicable capacity into the Balancing Market, thus producing more competitive prices.

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

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In preparing its Rule Change Proposal, the PUO consulted extensively with stakeholders on the proposed approach. The consultation included multiple discussions at Market Advisory Committee (0 \$ &) meetings and the presentation of a Pre-Rule Change Proposal for the MAC's discussion and comment.

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Changes to the Spinning Reserve cost allocation model were identified as an issue to be included in the MAC Market Rules Issues List at the 8 November 2017 MAC Meeting.

Ms Jenny Laidlaw noted that, in the past, both the Independent Market Operator and the Electricity Market Review had recommended implementation of a full runway model for allocation of Spinning Reserve costs. Several members of the MAC expressed support for the full runway model.

AEMO indicated that it would be feasible to implement a full runway model in advance of other major energy market reforms.

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The MAC discussed the issue as part of the MAC Market Rules Issues List (agenda item 8(c), issue 20/38). The discussion centred on the likely net benefits of progressing this issue before the changes to the market being discussed under the Wholesale Electricity Market Reform Program for 2022.

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Mr Matthew Martin noted that the PUO was seeking comments on its Pre-Rule Change Proposal: Full Runway Allocation of Spinning Reserve Costs (RC_2018_06) before its formal submission into the rule change process, and that the issue addressed by the proposal had been discussed by the MAC on several occasions.

Ms Aditi Varma provided an overview of the Pre-Rule Change Proposal with the following key points discussed:

- x Mr Daniel Kurz noted that Bluewaters Power (%OXHZ) had raised concerns with the block method for Spinning Reserve cost allocation for several years and thanked the PUO for developing the Pre-Rule Change Proposal. Mr Kurz considered that the full runway method is a more appropriate cost allocation method and would remove inefficiencies that affect Bluewaters' Facilities. Mr Kurz had no issues with the drafting of the proposal.

The Australian Energy Council's submission considered that the rule change will better align with the causer pays principle, without distorting bidding behaviour in the Balancing market for Spinning Reserve costs.

Community Electricity considered that the Rule Change Proposal is a quick, simple, cost-effective and broadly supported solution to a long-standing inefficiency in the Wholesale Electricity Market. Community Electricity supported the PUO's contention that the existing charging structure is economically inefficient because it distorts bidding strategies and dispatch outcomes, and also new-entrant plant configuration design and timing of market entry. Community Electricity agreed with the PUO's contention that the proposed changes will reduce costs to Market Customers.

Perth Energy stated that the present system has the perverse incentive of encouraging lower cost plant to throttle its output to avoid moving into a higher capacity Spinning Reserve block.

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The Rule Change Panel's draft assessment against clauses 2.4.2 and 2.4.3 of the Market Rules and analysis of the Rule Change Proposal are provided in section 5 of the Draft Rule Change Report.

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The Rule Change Panel's decision in the Draft Rule Change Report was to accept the Rule Change Proposal in a modified form, as set out in section 7 of the Draft Rule Change Report.

The reasons for the Rule Change Panel's proposed decision are set out in section 6.1 of the Draft Rule Change Report.

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In preparing its Final Rule Change Report, the Rule Change Panel must assess the Rule Change Proposal in light of clauses 2.4.2 and 2.4.3 of the Market Rules.

Clause 2.4.2 of the Market Rules states that the Rule Change Panel "must not make Amending Rules unless it is satisfied that the Market Rules, as proposed to be amended or replaced, are consistent with the Wholesale Market Objectives". Additionally, clause 2.4.3 of the Market Rules states that, when deciding whether to make Amending Rules, the Rule Change Panel must have regard to:

- x any applicable statement of policy principles the Minister has issued to the Rule Change Panel under clause 2.5.2 of the Market Rules;
- x the practicality and cost of implementing the proposal;
- x the views expressed in submissions and by the MAC; and
- x any technical studies that the Rule Change Panel considers necessary to assist in assessing the Rule Change Proposal.

In making its final decision, the Rule Change Panel has had regard to each of the matters identified in clauses 2.4.2 and 2.4.3 of the Market Rules as follows:

- x the Rule Change Panel's assessment of the Rule Change Proposal against the Wholesale Market Objectives is available in section 7.4 of this report;
- x the Rule Change Panel notes that there has not been any applicable statement of policy principles from the Minister in respect of this Rule Change Proposal;
- x the Rule Change Panel's assessment of the practicality and cost of implementing the Rule Change Proposal is available in section 7.6 of this report;
- x a summary of the views expressed in submissions is available in section 4 of this report. Views of the MAC are available in section 4.1 of this report. The Rule Change Panel's responses to the submissions is available in sections 4.3 and 4.5 of this report; and
- x the Rule Change Panel does not believe a technical study in respect of this Rule Change Proposal is required and therefore has not commissioned one.

The Rule Change Panel's assessment is presented in the following sections.

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The Rule Change Panel's final assessment of the proposed amendments is the same as its assessment detailed in section 5.1 of the Draft Rule Change Report (included in Appendix C).

However, the Rule Change Panel has also identified a manifest error in the Market Rules that it considers should be addressed as part of this Rule Change Proposal, as discussed in section 7.3.2 of this report.

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AEMO suggested removing the synchronisation check in the proposed Step 1 of Appendix 2 and changes to the equation and syntax in the proposed Step 3 of Appendix 2, both of which are detailed in section 4.3 and Appendix A of the Draft Rule Change Report.

The Rule Change Panel stated that the removal of the synchronisation check was out of scope of this Rule Change Proposal due to the complexities in rectifying this issue. The Rule Change Panel endorsed and incorporated some of AEMO's proposed changes to the equation and syntax in the proposed Step 3 of Appendix 2, with minor enhancement to more precisely define the variables and add clarity to the calculation.

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Based upon AEMO's submission, the Rule Change Panel amended the proposed Amending Rules to more accurately define the variables and terms used in the formula in the proposed Step 3 of Appendix 2, and made refinements to the proposed Step 4 of Appendix 2 of the Market Rules. These additional amendments are presented in detail in Appendix A and are explained in section 4.3 of this report.

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The Rule Change Panel identified a further change to the drafting in the Draft Rule Change Report. A manifest error has been identified in clause 2.30.7A that refers to 'Reserve Share (p,t)' which should be SR_Share (p,t), as per Appendix 5 of the Market Rules.

As this is a minor issue and is related to the topic of Spinning Reserve, the Rule Change Panel considers this correction is within the scope of this Rule Change Proposal. The Rule Change Panel does not consider further consultation is necessary as the underlying meaning and intent of clause 2.30.7A does not change.

The additional amendments are shown in Appendix B of this report.

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The Rule Change Panel considers that the proposed amendments to the Market Rules are consistent with the Wholesale Market Objectives because the Amending Rules will:

- x provide more cost-reflective signals to generators of the Spinning Reserve costs associated with different levels of generation, which promotes Wholesale Market Objective (a);

x lead to greater competition through more cost-reflective pricing

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The Rule Change Panel has decided to implement the following Amending Rules (~~deleted text~~, added text):

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2.30.7A. If AEMO approves the aggregation of Facilities of a Scheduled Generator then each individual facility in that aggregated Facility that injects energy at an individual network connection point to the South West interconnected system must be treated as an individual Facility for the purpose of determining the Reserve ShareSR Share (p,t) values under Appendix 2.

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3	>65 and —125	60
4	>45 and —65	20
5	>10 and —45	35

Table 1: Data for Determine Reserve_Share(p,t)

For each Block, indicated by block number b, in Table 1, the Reserve Block Share is:

If $\text{Sum}(f(i)) > 0$

$$\text{RBS}(b) = [\text{Block Size}(b) / \text{Sum}(i, \text{Block Size}(i))] / \text{Sum}(f(i), \text{TIS}(f))$$

If $\text{Sum}(f(i)) = 0$

$$\text{RBS}(b) = 0$$

Where

Block Size(i) is the size of the Block with block number i listed in Table 1.

f(i) is the subset of applicable facilities that had applicable capacities for Trading Interval t lying within the block range of any Block with a block number value of b or less.

TIS(f) is 1 if the applicable facility f was synchronised to the SWIS during Trading Interval t, and is zero otherwise.

For each Block b in Table 1, the Reserve Generator Share is:

$$\text{RGS}(b) = \text{Sum}(i, \text{RBS}(i))$$

Where

i is the set of Blocks listed in Table 1 that have a block number i greater than or equal to b.

For each Market Participant p, its unadjusted share of the Spinning Reserve service payment costs for the Trading Interval is:

$$\text{USHARE}(p) = \text{Sum}(f(p), \text{RGS}(b(f)) \times \text{TIS}(f))$$

Where

f(p) is the set of applicable facilities for the Market Participant p that have applicable capacities within one of the block ranges listed in Table 1.

b(f) is the block number of the Block in Table 1 that has a block range that corresponds to the applicable capacity of the applicable facility f.

TIS(f) is 1 if the applicable facility f was synchronised to the SWIS during Trading Interval t, and is zero otherwise.

For each Market Participant p, its adjusted share of the Spinning Reserve services payment costs for Trading Interval t is:

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- the applicable capacity value for facility f resulting from the process described in the bullet points in this Step 1 is less than or equal to 10 MW.

Step 2: For Trading Interval t , rank all applicable facilities f in ascending order from the facility with the lowest applicable capacity to the facility with the highest applicable capacity, as determined in accordance with Step 1. If two or more facilities have the same applicable capacity in Trading Interval t , these facilities are ranked in random order by AEMO.

STEP Step 3: For each facility f determine the Facility Spinning Reserve Share for Trading Interval t as:

$$SR_{f,t} = \frac{MW(i,t) - MW(i-1,t)}{MW(n,t) - MW(i-1,t)}$$

Where:

- i is the ranking number of facility f determined in Step 2.
- n is the total number of applicable facilities in the ranked list for Trading Interval t determined in Step 2.
- $rank(f,t)$ is the rank of facility f for Trading Interval t , as determined under in Step 2.
- $MW(i,t)$ is the applicable capacity associated with of the facility f at with rank i for Trading Interval t , where $MW(0,t) = 0$.
- $MW(i-1)$ is the applicable capacity associated with the facility ranked immediately prior to facility ranked i . Where $i=1$, the value of $MW(i-1)$ is zero.
- $MW(n)$ is the applicable capacity associated with the facility at rank n .

Step 4: For each Trading Interval t , calculate the $SR_Share(p,t)$ value for each Market Participant p in Trading Interval t as:

$$SR_{Share}(p,t) = \frac{\sum_{f \in F} FSR_{f,t}}{\sum_{f \in F} MW(f,t)}$$

Where:

- F is the set of applicable facilities belonging to Market Participant p .
- f is a member of the set in F .
- $FSRS(f,t)$ is the Facility Spinning Reserve Share for facility f in Trading Interval t calculated in Step 3.

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In its Rule Change Proposal, the PUO seeks to replace the current modified runway approach for allocating Spinning Reserve costs with a full runway approach that allocates Spinning Reserve costs to each generator in a more granular way.² The full runway approach is more in line with the causer pays principle and reduces the distorted bidding behaviour³ in the Balancing Market that results from the current modified runway method.

The Rule Change Panel agrees with the PUO's general concept, as set out in its Rule Change Proposal. The current modified runway approach for allocating Spinning Reserve costs benefits those generators who generate near the top of a Spinning Reserve block at the expense of generators at the lower end of the Spinning Reserve block, as all generators within a block share the Spinning Reserve costs of that block equally. This cross-subsidy gives generators an incentive to generate until they reach the top of a Spinning Reserve block, and to avoid generating at the bottom end of a block. The modified runway approach imposes significant costs on any small amounts of capacity that fall into a higher MW range Spinning Reserve block. The Rule Change Panel's assessment is that the full runway approach removes these barriers to more competitively priced generation.

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As described in section 4.3 of this report, AEMO suggested changes to the proposed Step 3 of Appendix 2 of the Market Rules, which the Rule Change Panel has incorporated with minor amendments to provide further clarity to the interpretation of Step 3.

Given the magnitude of the analysis detailed below, the benefits of adopting this Rule Change Proposal outweigh the estimated costs.

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To estimate the likely benefits of adopting this Rule Change Proposal, the Rule Change Panel conducted a simplified scenario analysis of the impact of the proposed changes on the Balancing Market over 2018.⁴ The assumptions underpinning the scenario analysis are:

1. 2018 is typical of years going forward; and

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Each Trading Interval was evaluated individually over 2018. Where it was assumed that Bluewaters would provide a benefit (as described below) then the Balancing Merit Order (% 0 2 was re-evaluated to determine if there was an impact on the Balancing Price and to calculate efficiency gains to the market.

The scenarios demonstrating when benefits are considered are illustrated graphically in Figure 1, where the blue coloured blocks indicate the location of Bluewaters' capacity in the BMO for that Trading Interval.

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In detail, the scenarios are as follows:

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B Bluewaters is the marginal unit.	Since it is assumed that Bluewaters prices at the highest price it offers into a BMO for a particular Trading Interval, where it is the marginal unit there is no benefit to the market, as the additional MW offered would not impact the Final Balancing Price or produce an efficiency gain.
C Bluewaters bids both below and above the marginal unit in the BMO, but does not bid at the cap.	Since it is assumed that Bluewaters prices at the highest price it offers into a BMO for a particular Trading Interval, offering in the Analysis MW at a price above the Final Price would have no benefit to the market.
D All of Bluewaters capacity is bid in below the marginal unit in the BMO.	There is no spare capacity to offer into the market, and thus no benefit is available to the market.
E Bluewaters has more than just the Analysis MW bid in at the price cap.	No benefit is assumed, as the amount priced at the cap is assumed to be priced there for a reason other than Spinning Reserve costs.

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An efficiency gain is where the Analysis MW are offered into the BMO and lower priced generation is utilised compared to the actual BMO for that Trading Interval. That is, the market benefits from efficiency gains derived by the usage of lower priced generation, as

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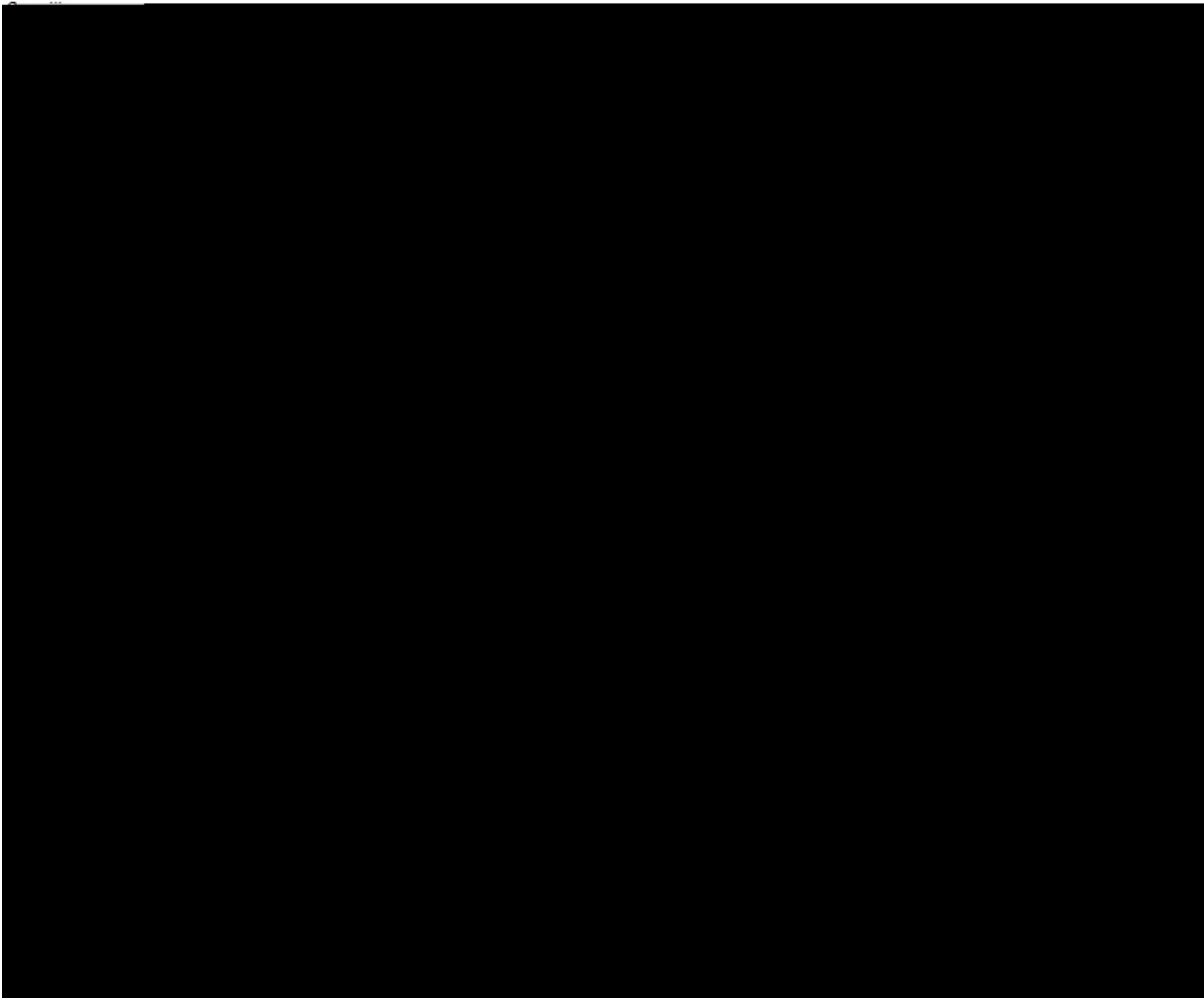


Figure 2 illustrates:

- x Scenario A, where the Balancing Price decreases due to the Analysis MW being made available at the highest Bluewaters bid price, which shifts the marginal block from being (i) to the next lower priced block (ii), i.e. from block (i) at \$44.19/MWh to block (ii) at \$37.76/MWh; and
- x Scenario B, where the Balancing Price does not decrease due to the Analysis MW being made available at the highest Bluewaters bid price, as the total Relevant Dispatch Quantity still remains within the block provided by the marginal unit (iii).

Regardless of the effects on the Balancing Market Price, there are efficiencies gained in the market through the use of lower cost plant. The efficiency gain was identified as occurring either:

- x where the Balancing Price of a Trading Interval did not change with the addition of the Analysis MW (this was calculated as the cost of the MW in the marginal unit block for a Trading Interval minus the Analysis MW priced at the highest Bluewaters priced block); or
- x where the Balancing Price of a Trading Interval changed with the addition of the Analysis MW (this calculation was based on the amount of Analysis MW available for that Trading Interval, the MW portion in the marginal unit block, and the MW portion in the next

highest BMO block minus the Analysis MW priced at the highest Bluewaters priced block).

Where the methodology conditions were not met (i.e. Bluewaters was deemed not to offer in any Analysis MW for a Trading Interval), it was assumed that there was no efficiency gain.

Based upon this analysis, the estimated efficiency gain for the addition of the Analysis MW over 2018 was over \$1 million. Thus, the analysis indicates that there is a significant efficiency gain to the market that can be achieved through the adoption of this Rule Change Proposal.

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The effect on the Balancing Price over 2018 was calculated as a simple average of the price difference between the Balancing Price (where the Analysis MW provided a change in the Balancing Price) and the actual Final Balancing Price. The scenarios set out in Figure 1 demonstrate the situations where Bluewaters is able to make the Analysis MW available into the BMO that could have an impact on the Balancing Price. Where the addition of the Analysis MW did not change the Balancing Price, it was considered that there was no benefit to Balancing Market Prices.

The estimated impact of the Analysis MW over 2018 was a decrease in the Average Balancing Market Price of approximately \$0.70/MWh, which equates to around a 1.5% decrease in the average Final Balancing Price.⁹

Bluewaters stated in its submission that approximately 17 MW of capacity could be available per Facility under the full runway method, as proposed in this Rule Change Proposal. The Rule Change Panel conducted further analysis based upon this entire 17 MW of capacity being made available to the Balancing Market, using the same methodology described above for analysing the Analysis MW. The result of this analysis was an estimated decrease to the 2018 Average Balancing Market Price of \$2.10/MWh, which equates to around a 4.5% decrease in the average Final Balancing Price. The Rule Change Panel notes that this is in the range estimated by Bluewaters in its submission.

Therefore, the Rule Change Panel is of the view that adoption of this Rule Change Proposal is likely to have a material impact upon the Balancing Price (likely lowering the Balancing Price), which is likely to have flow on effects to the broader market.

A cautionary note is that this analysis did not model the potential change in bidding behaviour of all Market Participants under the proposed full runway cost allocation model in this Rule Change Proposal due to the different costs per MW for each generator. However, based on analysis of changes only to Bluewaters' bidding, the likely impact would be greater efficiency in the market due to greater availability of energy at more competitive prices.

Additionally, implementing the Rule Change Proposal will increase competition, as more generators are likely to offer more energy into the Balancing Market at lower prices, as Spinning Reserve costs are more efficiently allocated.

⁹ For 2018, the simple average Balancing Price was calculated at \$46.84/MWh per Trading Interval.