

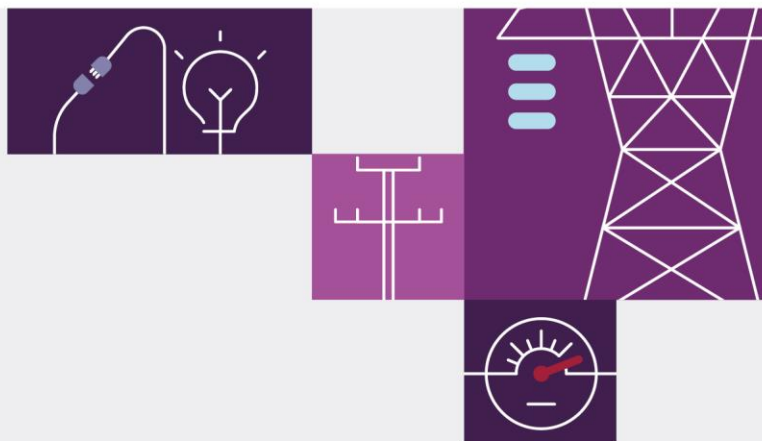
Wholesale Electricity Market

Procedure change report: AEPC_2024_13

January 2025

WEM Procedure: Dispatch Algorithm Formulation





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Executive summary

Purpose

The publication of this Procedure Change Report and the accompanying Wholesale Electricity Market Procedure (**WEM Procedure**) completes the Procedure Change Process conducted by AEMO to consider proposed amendments to the WEM Procedure: Dispatch Algorithm Formulation (**Procedure**) under the Wholesale Electricity Market Rules (**WEM Rules**).

Proposed amendments

AEMO proposed the following amendments in response to the Frequency Co-optimised Essential System Services (FCESS) Cost Review Amending Rules:

- Various amendments throughout paragraph 2 to outline how the updated tiebreak process is represented in the Dispatch Algorithm
- Consequential amendments to Table 5 to include two new tiebreak Constraint Violation Quantity variables.
- New Appendix G, to outline the process for determining Facility Tiebreak Numbers and the priority order to give effect to the new tiebreaking rules.

Other proposed amendments included:

- Minor wording amendments to improve clarity.
- Separating Active Fast Start Facilities with a Fast Start Target Mode of 0 to 4 under paragraphs 3.1.2(b) and 3.1.2(c) to better reflect the operating behaviour of these Facilities.
- Replacing “Alternative Maximum STEM Price” with “Energy Offer Price Ceiling” under paragraph B.1.2, following removal of the concept from the WEM Rules.

Consultation

AEMO published the Procedure Change Proposal and issued a call for submissions on 31 October 2024.


AEMO held an AEMO Procedure Change Working Group meeting on 13 November 2024. No feedback was received.

The submission period closed on 28 November 2024. No submissions were received.

Changes after consultation

When finalising the Procedure after the closure of the consultation period, AEMO identified two typographical errors in the Procedure drafting:

- The CVP Value for the TBSlack4 Constraint Violation Quantity variable under Table 5 incorrectly referenced 1e-6, where it should instead reflect 1e-4. AEMO has corrected this in the final version of the Procedure.

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- The priority order under paragraph G.2.1(b)(ii) was incorrectly captured as “descending” and “decrementing”, where it should instead be “ascending” and “incrementing”. AEMO has corrected this in the final version of the Procedure.

AEMO also identified various paragraph auto-referencing errors in paragraphs 2 and 3 of the Procedure. These have been corrected in the final version of the Procedure.

The abovementioned corrections do not impact cost and pricing outcomes or alter Market Participant processes.

AEMO's decision

AEMO considers the revised Procedure is consistent with the *Electricity Industry Act 2004 (WA)*, the *Electricity Industry (Wholesale Electricity Market) Regulations 2004 (WA)* (**WEM Regulations**), the WEM Rules and the WEM Objectives.

As such, AEMO's decision is to accept the Procedure, as amended.

Next steps

The revised Procedure will commence at 9:00 am on 6 January 2025.



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1 Background

1.1 Regulatory requirements

The publication of this Procedure Change Report and the accompanying Wholesale Electricity Market Procedure (**WEM Procedure**) completes the Procedure Change Process conducted by AEMO to consider proposed amendments to the WEM Procedure: Dispatch Algorithm Formulation (**Procedure**) under the Wholesale Electricity Market Rules (**WEM Rules**).

The purpose of the WEM Procedure: Dispatch Algorithm Formulation (Procedure), is to document:

- (a) the Dispatch Algorithm used by AEMO for the purpose of the Central Dispatch Process and setting Market Clearing Prices and the mathematical formulation of the Dispatch Algorithm, including **[clause 7.2.5(a)]**:
 - (i) the calculation of the required quantity of Contingency Reserve Raise **[clause 7.2.5(a)(iii)]**; in a form that:
 - (ii) sets out the form, scope and construction of each type of Constraint Equation **[clause 7.2.5(a)(v)]**;
 - (iii) describes and quantifies the mechanism by which different Constraints are taken into account and prioritised, including in accordance with clauses 3.12.2 and 7.6.25 **[clause 7.2.5(a)(vi)]**; and
 - (iv) AEMO reasonably considers will enable a third party, such as the Market Auditor or the Economic Regulation Authority, to replicate the results of the Dispatch Algorithm by using the same inputs **[clause 7.2.5(a)(vii)]**;
- (b) the processes to be followed by AEMO and Market Participants in accounting for Inflexible Facilities **[clause 7.2.5(c)]**;
- (c) the methodology AEMO will use, and any assumptions it may be required to make, to determine the Market Clearing Prices during AEMO Intervention Events under clauses 7.11C.7, 7.11C.8 and 7.11C.10. The methodology must, wherever reasonably practicable **[clause 7.11C.11]**:
 - (i) be consistent with the principles for the determination of Market Clearing Prices set out in section 7.11A **[clause 7.11C.11(a)]**; and
 - (ii) enable AEMO to determine and publish such prices in accordance with the applicable timeframes for the publication of the Market Clearing Prices under these WEM Rules **[clause 7.11C.11(b)]**;
- (d) the processes to be followed by AEMO for the relaxation of Constraints under clause 7.2.6 **[clause 7.2.8]**;
- (e) situations that are deemed to be significant for the purposes of clause 7.6.24(b). **[clause 7.6.27]**;
- (f) the method to be used by AEMO to determine Facility Tiebreak Numbers under clause 7.5.17(a) **[clause 7.5.18]**.



AEMO has published this Procedure Change Report in accordance with the Procedure Change Process specified in section 2.10 of the WEM Rules.

1.2 Context

AEMO commenced the Procedure Change Process to propose amendments to the Procedure as a result of the FCESS Cost Review Amending Rules¹.

The FCESS Cost Review Amending Rules published by Energy Policy WA seek to reduce costs incurred in the FCESS market. These Amending Rules are intended to reduce FCESS costs that have increased significantly under the Security Constrained Economic Dispatch market, in comparison to similar services in the Balancing Market, prior to 1 October 2023.

AEMO considers that the proposed amendments to the Procedure will ensure consistency with the Amending Rules.

While amending the Procedure to align with the FCESS Cost Review Amending Rules, AEMO identified other minor amendments that were required to be made to improve clarity and alignment with operational experience.

1.3 Procedure change process and timetable

On 31 October 2024, AEMO published the Procedure Change Proposal (PCP) and issued a call for submissions. The proposal was progressed using the Procedure Change Process specified in section 2.10 of the WEM Rules with submissions closing on 28 November 2024. No submissions were received.

2 Proposed procedure change

This section details the changes that AEMO proposed when the call for submissions was published.

2.1 Detail of the proposed procedure change

Amendments have been made to the Procedure to align with changes to the WEM Rules under the FCESS Cost Review Amending Rules. These updates include:


- Amending paragraph 1.1.4(e) to ensure consistency with the amendments to clause 7.6.27 of the WEM Rules.
- Deleting paragraph 1.1.4(f) to ensure consistency with the amendments to clause 7.6.27 of the WEM Rules.
- Adding a new paragraph 1.1.4(f), following new clause 7.5.18 of the WEM Rules.

¹ <https://www.wa.gov.au/government/publications/energy-policy-wa-has-released-the-exposure-draft-of-fcess-cost-review-amendments-consultation>

- Deleting the definition for “Price-Tied Tranche” under Table 1 of the Procedure. The definition is no longer required following the inclusion of paragraphs 2.1.12 and 2.1.13, which represent situations in the Dispatch Algorithm that are considered Price-Tied or Price-Tied Tranches.
- Adding paragraph 2.2.43, representing the Priority Order for dispatch where the Dispatch Algorithm encounters tied Price-Quantity Pairs for a Market Service in Real-Time Market Submissions.
- Amending paragraph 2.3.7, to update the Tiebreaking Variables in accordance with amendments to clause 7.5.15 of the WEM Rules.
- Adding paragraphs 2.4.45 and 2.4.46, 2.4.47 and 2.4.48 to represent the Tiebreaking Constraints applied for each relevant Market Service to avoid degenerate solutions in accordance with the requirements of clauses 7.5.15 and 7.5.16 of the WEM Rules. These Constraints replace the Tiebreaking Constraints previously represented under paragraphs 2.4.33 and 2.4.34, which are now represented as [BLANK]. AEMO has not deleted these paragraphs due to certification testing being linked to paragraph references within the Procedure.
- Amending the section references and CVP Values for the TBSlack1 and TBSlack1 Constraint Violation Quantity variables under Table 5, to represent the new Constraints added under paragraphs 2.4.45 and 2.4.46.
- Adding new Constraint Violation Quantity variables under Table 5 for TBSlack3 and TBSlack4 to represent new Constraint equations added under paragraphs 2.4.47 and 2.4.48.
- Amending to the preamble for paragraph 3 to remove reference to clause 7.6.23 of the WEM Rules, following the deletion of this clause. The paragraph is updated to reference new clauses 7.5.15 to 7.5.18 of the WEM Rules and the associated paragraphs within the Procedure which document the priority order.
- Adding paragraph G.1 to outline the process in which AEMO will determine Facility Tiebreak Numbers for the purposes of clause 7.5.17(a) of the WEM Rules. This is added to the Procedure in accordance with clause 7.5.18 of the WEM Rules.
- Adding paragraph G.2 to outline how the Facility Tiebreak Number under paragraph G.1 is applied in the Dispatch Algorithm when avoiding Degenerate Solutions caused by any tied Price-Quantity Pairs for a Market Service in Real-Time Market Submissions, in accordance with the requirements of clause 7.5.15 of the WEM Rules.

While making the above listed amendments as a result of the FCESS Cost Review Amending Rules, AEMO has taken the opportunity to make other amendments to the Procedure as follows:

- Minor amendments to formulas under paragraphs 2.4.8, 2.4.9 and 2.4.10 to reflect “regulation_raise” and “contingency_raise” as opposed to “regr” and “conr”.
- Replacing “marginal value” with “shadow price” throughout the Procedure. Both terms have the same meaning and in AEMO’s interactions with stakeholders, it appears “shadow price” is more commonly understood. As such, AEMO has made this change to ensure consistency in terminology and to improve understanding.
- Adding paragraph 3.1.2(c) to separate Active Fast Start Facilities with a Fast Start Target Mode of 0 to 4 and Constraint Equations that do not apply to these Facilities from paragraph 3.1.2(b). AEMO has made this change, as an Active Fast Start Facility in Fast Start Target Mode 5 effectively operates like a normal Facility



and therefore, the Constraint Equations that do not apply to this type of Facility differs from those with a Fast Start Target Mode of 0 to 4.

- Amending paragraphs 3.2.2(c) and 3.2.2(d) in accordance with the above listed changes to paragraphs 3.1.2(c) and 3.1.2(b).
- Replacing “Alternative Maximum STEM Price” with “Energy Offer Price Ceiling” under paragraph B.1.2, following removal of the concept from the WEM Rules. AEMO believe that Energy Offer Price Ceiling fulfils the same purpose of representing the maximum price of energy.

2.2 Proposed drafting

AEMO published drafts of the proposed Procedure for consultation. Clean and change-marked versions are available at: https://www.aemo.com.au/consultations/current-and-closed-consultations/aepc_2024_13.

3 Consultation process

3.1 AEMO Procedure Change Working Group

An overview of the proposed amended Procedure was presented at the AEMO Procedure Change Working Group meeting held on 13 November 2024. No feedback was received at the meeting. The papers and minutes from the meeting can be found at: <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/wem-aemo-procedure-change-working-group>.

3.2 Submissions received during the consultation period

AEMO published the Procedure Change Proposal and issued a call for submissions on 31 October 2024. The submission period closed on 28 November 2024. No submissions were received.



4 Further changes to the Procedure

4.1 Changes after consultation

When finalising the Procedure after the closure of the consultation period, AEMO identified two typographical errors in the Procedure drafting:

- The CVP Value for the TBSlack4 Constraint Violation Quantity variable under Table 5 incorrectly referenced 1e-6, where it should instead reflect 1e-4. AEMO has corrected this in the final version of the Procedure.
- The priority order under paragraph G.2.1(b)(ii) was incorrectly captured as “descending” and “decrementing”, where it should instead be “ascending” and “incrementing”. AEMO has corrected this in the final version of the Procedure.

AEMO also identified various paragraph auto-referencing errors in paragraphs 2 and 3 of the Procedure. These have been corrected in the final version of the Procedure.

The abovementioned corrections do not impact cost and pricing outcomes or alter Market Participant processes.

5 AEMO's assessment

5.1 Consistency with Electricity Industry Act, WEM Regulations, WEM Rules and Wholesale Electricity Market Objectives

AEMO considers that the revised Procedure is consistent with the:

- *Electricity Industry Act 2004*;
- WEM Regulations 2004;
- WEM Rules; and
- Wholesale Electricity Market Objectives.

5.2 AEMO's decision

AEMO's decision is to accept the amended Procedure.

5.3 Implementation of the Procedure

The amended Procedure will commence at 9:00 am on 6 January 2025.

The revised WEM Procedure: Dispatch Algorithm Formulation is available at:

https://www.aemo.com.au/consultations/current-and-closed-consultations/aepe_2024_13.