

Release Notes: WEM Dispatch Engine 3.1.0 WEM FCESS Cost Review November 2024





Important notice

Purpose

The Australian Energy Market Operator has prepared this document to provide information about the WEM Dispatch Engine release as at the date of publication.

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Document version control

Version	Release date	Changes
1.0	31/10/2024	Initial Issue
1.1	12/11/2024	Update to Table 2 to reflect impacts to the InServiceCapacityOnly Scenario for the Week-Ahead Market Schedule

Document approval

Name	Position	Date
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1 Introduction

1.1 Overview

These are the release notes for the WEM FCESS Cost Review - WEM Dispatch Engine 3.1.0 release. This WEMDE release includes updates to the Facility Tie-Break Methodology, estimated FCESS Uplift Calculations and settlement inputs as well as amendments to the definitions of different Scenarios.

The changes introduced in this release are described in the sections below.

1.2 Terms and abbreviations

The terms and abbreviations used in this document are outlined in Table 1.

Table 1 Terms and abbreviations

Abbreviation	Expanded name
MSDC	Market Surveillance Data Catalogue
RTMS	Real-Time Market Submission
WEMDE	WEM Dispatch Engine
WEM PaSS	WEM Prudential and Settlement System
WSI	WEMDE Settlement Integration



2 Facility Tie-Break Methodology Redesign

Details related to the implementation of the Facility Tie-Break Methodology Redesign are documented in the [WEM Procedure: Dispatch Algorithm Formulation](#). The high-level amendments are listed below:

- Removal of Tiebreaking constraints [**paragraphs 2.4.33 & 2.4.34**]
- Addition of new sets *Price-Tied Set* and *Price-Tied Tranche Set*
- Addition of new tiebreaking constraints [**paragraphs 2.4.45 - 2.4.48**]
- Addition of new parameter *PriorityOrder*, and
- Addition of Appendix G to describe the determination of Facility Tiebreak Numbers and Priority Order for each Market Service to meet the new requirements of [**MR 7.5.18**].

3 Market Schedules

Changes to Scenarios produced by WEMDE are present in this release. The underlying definitions of Scenarios have been altered as follows:

- AEMO must include a Reference Scenario and Available Capacity Scenario in each Market Schedule [MR 7.8.4]
- Redefine the Reference Scenario to be what is currently known as the In-Service Capacity Only Scenario [MR 7.8.5 & 7.8.5A]
- Introduce the Available Capacity Scenario and define it as what is currently known as the Reference Scenario [MR 7.8.5B]
- Align the Forecast High and Forecast Low Scenarios with the same inputs and assumptions used in the:
 - Reference Scenario for Pre-Dispatch Market Schedules [MR 7.8.6A]
 - Available Capacity Scenario for Week-Ahead Market Schedules [MR 7.8.6]

Table 2 Scenarios produced for Market Schedules

Market Schedule	Scenario	Produced Prior to Release	Produced Post Release
Dispatch	InServiceCapacityOnly	✓	
	Reference	✓	✓
	AvailableCapacity		✓
Pre-Dispatch	InServiceCapacityOnly	✓	
	Reference	✓	✓
	AvailableCapacity		✓
Week-Ahead	InServiceCapacityOnly	✓	
	Reference	✓	✓
	AvailableCapacity		✓

**Production of the ForecastHigh and ForecastLow Scenarios have not been altered as part of this release and have not been documented in the table provided.*



4 Estimated FCESS Uplift Calculations

The underlying formulas used in the calculation of estimated FCESS Uplift Payments have been replaced to align with the new Section 7.17 of the WEM Rules.

4.1 Formulas

EstFCESSUpliftPayment(f,DI)

$$EstFCESSUpliftPayment(f,DI) = \begin{cases} 0, & \text{if } \sum_{m \in FCESS} EnablementQty(m, f, DI) = 0 \\ 0, & \text{if } DispatchTarget(f, DI) \leq 0 \\ Max(0, RTMDispatchCost(f, DI) - RTMBaseCompensation(f, DI), & \text{otherwise} \end{cases}$$

RTMDispatchCost(f,DI)

$$RTMDispatchCost(f,DI) = \left(\sum_{epq \in EnergyOffer(f,DI)} (ClearedEnergyQty(f,DI,epq) \times EnergyPrice(f,DI,epq)) + \sum_{m \in FCESS} \sum_{fpq \in FCESSOffer(m,f,DI)} (ClearedQty(m,f,DI,fpq) \times FCESSPrice(m,f,DI,fpq)) \right) \times 5/60$$



RTMBaseCompensation(f,DI)

$$\begin{aligned}
 &RTMBaseCompensation(f, DI) \\
 &= \left(FCESSMinDispatchTarget(f, DI) \times EMCP(DI) \times LF(f, DI) \right. \\
 &\quad \left. + \sum_{m \in FCESS} (EnablementQty(m, f, DI) \times MCP(m, DI) \times PF(m, f, DI)) \right) \times 5/60
 \end{aligned}$$

FCESSMinDispatchTarget(f,DI)

$$FCESSMinDispatchTarget(f, DI) = \text{Max}(0, \text{Raise_MinDT}(f, DI), \text{Lower_MinDT}(f, DI))$$

Raise_MinDT(f,DI)

$$\text{Raise_MinDT}(f, DI) = \begin{cases} \text{Max}(EM_CR(f, DI), EM_RR(f, DI)), & \text{if } CR_EnablementQuantity(f, DI) > 0 \text{ and } RR_EnablementQuantity(f, DI) > 0 \\ EM_CR(f, DI), & \text{if } CR_EnablementQuantity(f, DI) > 0 \text{ and } RR_EnablementQuantity \leq 0 \\ EM_RR(f, DI), & \text{if } RR_EnablementQuantity(f, DI) > 0 \text{ and } CR_EnablementQuantity \leq 0 \\ 0, & \text{otherwise} \end{cases}$$



Lower_MinDT(f,DI)

$$\text{Lower_MinDT}(f, DI) = \begin{cases} CL_EnablementQuantity(f, DI) + RL_EnablementQuantity(f, DI) + \max(EM_CL(f, DI), EM_RL(f, DI)), & \text{If } CL_EnablementQuantity(f, DI) > 0 \text{ and } RL_EnablementQuantity(f, DI) > 0 \\ EM_CL(f, DI) + CL_EnablementQuantity(f, DI), & \text{If } CL_EnablementQuantity(f, DI) > 0 \text{ and } RL_EnablementQuantity(f, DI) \leq 0 \\ EM_RL(f, DI) + RL_EnablementQuantity(f, DI), & \text{If } RL_EnablementQuantity(f, DI) > 0 \text{ and } CL_EnablementQuantity(f, DI) \leq 0 \\ 0, & \text{otherwise} \end{cases}$$



4.2 Real-Time Market Submissions – Processing

If a Loss Factor Adjusted Price is determined in accordance with **[MR 7.4.50]** then AEMO must deem the price ('submitted price') in the Real-Time Market Submission to be equal to:

$$\text{submittedPrice}(f, DI) = \text{EnergyOfferCap}(DI) \times \text{LossFactor}(f, DI)$$

The modified submitted price determined under **[MR 7.4.51]** will be used when calculating the $\text{RTMDispatchCost}(f, DI)$ as part of the input:

$$epq \in \text{EnergyOffer}(f, DI)$$

5 Additional Scope

In addition to the functionality above, the scope mentioned below has been delivered in this release.

Table 3 Additional Scope Items

Scope Item	Status	Summary
Certification	●	Preparation of materials required to certify the Facility Tie-break Methodology Redesign by an external vendor.
WEMDE Settlement Integration (WSI)	●	Provision of data to WEM PaSS for the purpose of Prudential and Settlement calculations.
MSDC	●	Fulfill AEMO’s obligations, in relation to scope introduced in the WEM FCESS Cost Review, under Section 2.16 of the WEM Rules.
Not In-Service Capacity Updates	●	Changes to the Not In-Service Capacity calculation related to the change in Market Schedule definitions. Clause 7.13A.2 has been updated to use the Available Capacity Scenario.
STPASA Calculation and Publication	●	Ensure that AEMO’s STPASA publication utilises the Available Capacity Scenario.
WEMDE-UI	●	Update WEMDE-UI to align with the change in Scenario definitions.

Table 4 Status Legend

Status
● Internal AEMO changes. No impact to Market Participants.
● Additional functionality. Market Participants awareness only.
● Change to Market Participant functionality. Needs Market Participant attention.