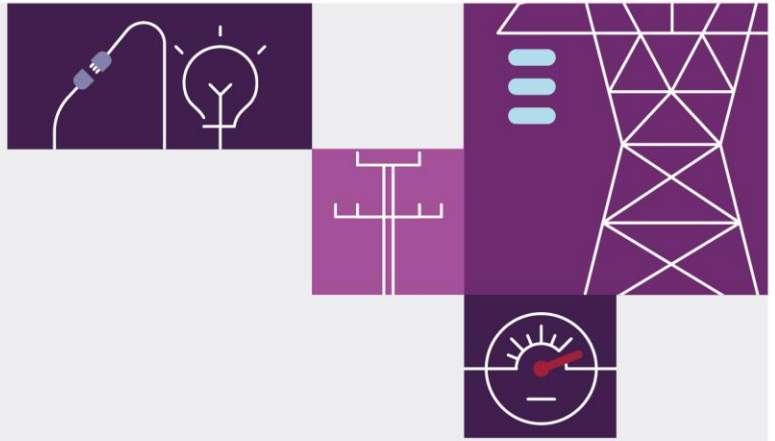# WEM Settlement Statement and Invoice Technical Guide

Version 2.0

Applicable from Trading Day 1 October 2023

Important notice

Purpose

The Australian Energy Market Operator (AEMO) has prepared this document to provide information about the Wholesale Electricity Market Settlement Statements and Invoices as at the date of publication.

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Version control

Version	Release date	Changes
1.0	25/8/2021	Initial publication
2.0	17/11/2023	Updated for WEM Rules effective 1 October 2023 (WEM Reform)

Document approval

Name	Position	Date
Nicholas Nielsen	Manager, WA Prudentials and Settlements	10/11/2023

Contents

Tables

1. Introduction

1.1 Purpose

This document is the WEM Settlement Statement and Invoice Technical Guide. This document provides general information about the formats of the Settlement Statements, adjusted Settlement Statements, and Invoices produced by the Prudential and Settlement Service (PaSS) application, in accordance with the WEM Rules effective 1 October 2023.

1.2 Application

This document applies to:

- AEMO who is required to issue Settlement Statement and Invoices to Rule Participants; and

- Rule Participants who are required to pay amounts owing on Invoices, or who are to receive amounts owing on Invoices.

All references to rules and procedures relate to the Wholesale Electricity Market.

> Version 2.0 of this document is effective for all Settlement Statements and Invoices issued for Trading Weeks commencing 1 October 2023 onwards, in accordance with the Post-Amended Rules.
>
> Version 1.0 of this document is effective for all NSTEM and STEM trading periods with settlement Invoices issued on or after 1 August 2021, in accordance with the Pre-Amended Rules.

1.3 Supporting documentation

This guide should be read in conjunction with the following documents:

- WEM Metering, Settlement and Prudential Calculations from Version 5.0
- WEM Procedure: Settlement effective from 1 October 2023
- Prudential and Settlements Service User Guide from Version 1

1.4 Terms and abbreviations

The terms and abbreviations used in this document are outlined in Table 2.

Table 1   Terms and abbreviations

Term or abbreviation	Definition or expanded name
AEMO	Australian Energy Market Operator
API	Application Programming Interface

Term or abbreviation	Definition or expanded name
Formulation	Means the WEM Metering, Settlement and Prudential Calculations document
MPI	Market Participant Interface
PaSS	Prudential and Settlement Service
PCS	Product Configuration Specification
Post-Amended Rules	Means the WEM Rules as in force immediately after the New WEM Commencement Day [WEM Rule 1.47.1]
Pre-Amended Rules	Means the WEM Rules as in force immediately before the New WEM Commencement Day [WEM Rule 1.47.1]
RC	Reserve Capacity
RCM	Reserve Capacity Mechanism
RoPE	Reduction of Prudential Exposure
WEM	Wholesale Electricity Market
WEMS	Wholesale Electricity Market System

1.5 Further information

Please contact WA Prudentials and Settlements on wa.settlements@aemo.com.au for further information regarding the materials contained in this document.

2 Calculation Formulation

2.1 Overview

The WEM PaSS application is built on the basis of the independently certified WEM Metering, Settlement and Prudential Calculation document (the "Formulation"). This document creates a mathematically accurate representation of the WEM Rules, including:

- Representation of sets for use within the document;

- Mathematical equation representation of the WEM Rules;

- Specifications for variables used by the calculations;

- Trading Margin calculation for Participants on a given Trading Day;

- Settlement of the relevant market services;

- Interest calculation for the Adjustment Process; and

- Input estimation methodology for Prudential calculations.

This Formulation is the foundation for the prudential and settlement calculations implemented in AEMO's software.

2.2 Version

AEMO publishes the Formulation as a PDF file and as a text file.

The latest version(s) of the Formulation can be found under settlement technical guides on the AEMO Website.

More than one version may be current due to the applicable Trading Days.

3 Settlement Statements

3.1 Overview

AEMO provides Settlement Statements in two parts:

- Settlement Statement Summary: the high-level summary of a Settlement Statement for a Trading Week, associated with a Rule Participant.
- Settlement Statement Detail: the low-level details of a Settlement Statement for a Trading Day, associated with a Rule Participant.

Prior to the commencement of the PaSS system in August 2021, the Settlement Statement Detail was called the Participant Information Report (PIR).

Table 2   Types of Settlement Statement artefacts

Artefact	Content
Settlement Statement Summary	• Contains the variables outlined in Section 5.1 "Variable Categorisation" of the Formulation. • Provided in granularity D (Trading Day) and scope P (participant).
Settlement Statement Detail	• Contains the variables in Section 4 "Calculation Engine" of the Formulation. • Contains the variables in Section 3 "Metering Calculation Engine" of the Formulation as input values when those variables are used by the formulas in Section 4 "Calculation Engine". • Provided in the various granularities and scopes outlined in Section 1 "Introduction" of the Formulation.

3.2 Settlement Statement Summary artefacts

3.2.1 JSON format

AEMO provides the Settlement Statement Summary in JSON format through an API. The API model can be found in the PaSS API documentation (see Section 5).

3.2.2 CSV format

AEMO provides the Settlement Statement Summary in CSV format through the PaSS user interface. Refer to the Prudential and Settlements Service User Guide for details.

Table 3   Fields in the Settlement Statement Summary CSV file

Field	Description	Type	Format and Example
RunId	The identifier of the settlement run	Integer	e.g. 50000
PublishedAt	The time the calculation was published by AEMO	String	yyyy-MM-ddTHH:mm:ss e.g. 2023-10-31T15:30:45
MarketService	The market service of the settlement run	String	WEM
Designation	The designation of the settlement run used to indicate an initial calculation or an adjustment calculation	String	INITIAL | ADJ1 | ADJ2 | ADJ3 for WEM
Period	The name of the settlement run as either the Trading Week or Trading Month	String	TW DD MMM YYYY for WEMe.g. TW 01 Oct 2023

Field	Description	Type	Format and Example
PeriodFrom	The Trading Day at the start of the settlement run	String	dd/mm/yyyy e.g. 01/10/2023
PeriodTo	The Trading Day at the end of the settlement run	String	dd/mm/yyyy e.g. 08/10/2023
ParticipantId	The identifier of the Rule Participant associated with the settlement run	String	e.g. IMOWA
Variable	The variable associated with the settlement run	String	VariableName_P_D e.g. ETSA_P_D, STEMSAS_P_D, RoCoFcharge_P_D
Timestamp	The Trading Day associated with the Variable	String	dd/mm/yyyy e.g. 05/10/2023
P Or C	Indicates whether the Variable is a payment from AEMO to the Rule Participant (Payment) or a charge paid by the Rule Participant to AEMO (Charge)	String	Payment | Charge
GST Applicable	Indicates if GST is applicable (Y) or if GST is not applicable (N) to the Variable	String	Y | N
Value	The value associated with the Variable	Number	Decimal(23,8) e.g. 123.12345678

3.3 Settlement Statement Detail artefacts

3.3.1 JSON format

AEMO provides the Settlement Statement Detail in JSON format through an API. The API model can be found in the PaSS API documentation (see Section 5).

3.3.2 CSV format

AEMO provides the Settlement Statement Detail as a single ZIP file through the PaSS user interface. The ZIP file contains one CSV file per Trading Day in the Trading Week or Trading Month. Refer to the Prudential and Settlements Service User Guide for details.

Table 4   Fields in the Settlement Statement Detail CSV file

Field	Description	Type	Format and Example
RunId	The identifier of the settlement run	Integer	e.g. 50000
PublishedAt	The time the calculation was published by AEMO	String	yyyy-MM-ddTHH:mm:ss e.g. 2023-10-31T15:30:45
MarketService	The market service of the settlement run	String	WEM
Designation	The designation of the settlement run used to indicate an initial calculation or an adjustment calculation	String	INITIAL | ADJ1 | ADJ2 | ADJ3 for WEM
Period	The name of the settlement run as either the Trading Week or Trading Month	String	TW DD MMM YYYY for WEM e.g. TW 01 Oct 2023
PeriodFrom	The Trading Day at the start of the settlement run	String	dd/mm/yyyy e.g. 01/10/2023
PeriodTo	The Trading Day at the end of the settlement run	String	dd/mm/yyyy e.g. 08/10/2023

Field	Description	Type	Format and Example
ParticipantId	The identifier of the Rule Participant associated with the settlement run	String	e.g. IMOWA
Settlement Trading Day	The Trading Day associated with the settlement run	String	dd/mm/yyyy e.g. 05/10/2023
Variable	The variable associated with the settlement run	String	Name_Granularity_Scope e.g. CRpayment_F_DI, FRCDR_F_I, FRTP_G_I, MFRATE_G_FY, RCP_F_CY
Scope	The identifier for the scope associated with the Variable, which changes depending on whether the Variable relates to a tranche, channel, NMI, contract, facility, separately certified component, participant, or global	String	e.g. Facility_GT1, Facility_WF1, IMOWA, Global, 8008008000
Timestamp	The time period associated with the Variable, which changes depending on the granularity of the Variable	String	dd/mm/yyyy hh:mm e.g. 01/10/2023 08:15, 17/10/2023 00:00
Value	The value associated with the Variable	Number	Decimal(23,8) e.g. 123.12345678

4 Settlement Invoices

4.1 Overview

Settlement Invoices contain an itemised list of payments from AEMO to the Rule Participant and charges paid by the Rule Participant to AEMO that are associated with the Settlement Statement.

Invoices are issued for initial Settlement Statements and adjusted Settlement Statements.

Table 5   Types of Invoice artefacts

Artefact	Content
Invoice for initial Settlement Statement	• Contains line items for the variables outlined in Section 5.1 "Variable Categorisation" of the Formulation. • Provided in granularity X and scope P (participant). • For each line item, aggregate to a Trading Week, then display the total amount calculated for the current run.
Invoice for adjusted Settlement Statement	• Contains line items for the variables outlined in Section 5.1 "Variable Categorisation" of the Formulation. • Provided in granularity X and scope P (participant). • For each line item, aggregate to a Trading Week, then display the difference between the amount calculated for the current run to the amount calculated for the previous run for the same Trading Week.

4.2 Invoice sections

Invoices contain various sections of information in accordance with the WEM Rules and Australian tax legislation.

Table 6   Invoice sections

Section	Content	Application
Payment Summary	• Lists all GST applicable payments and charges line items. • Lists all GST not applicable payments and charges line items. • Displays total amount payable for all listed items, less any prepayments applied. • Displays prepayment balance, less any prepayments applied.	• All Invoices
Recipient Created Tax Invoice (RCTI)	• Supplier is the Participant and Recipient is AEMO. • Lists all GST applicable payments line items, negated. • Lists all GST not applicable payments line items, negated. • Displays total payable by AEMO for the listed items.	• All Invoices
Tax Invoice	• Supplier is AEMO and Recipient is the Participant. • Lists all GST applicable charges line items. • Lists all GST not applicable charges line items. • Displays total payable to AEMO for the listed items.	• All Invoices
Adjustment Information	• Displays difference between current run and previous run for the Recipient Created Tax Invoice. • Displays difference between current run and previous run for Tax Invoice.	• Only Invoices for adjusted Settlement Statements

4.3 Invoice artefacts

4.3.1 JSON format

AEMO provides Invoices in JSON format through an API. The API model can be found in the PaSS API documentation (see Section 5).

4.3.2 PDF file format

AEMO provides Invoices in PDF file format through an API and the PaSS user interface. The API can be found in the PaSS API documentation (see Section 5). Refer to the Prudential and Settlements Service User Guide for details on the PaSS user interface.

4.4 Invoice line items

One-to-one mappings for variables in the Formulation do not exist between the Pre-Amended Rules and the Post-Amended Rules.

Refer to Section 5 "Payments and Charges" of the Formulation for information on PaSS payments and charges, whether GST is applicable, descriptions of Invoice line items, and for understanding how the payments and charges are related.

5 APIs

AEMO uses a third party Swagger platform to document the APIs for the PaSS system and share the information with Rule Participants.

A web certificate must be obtained from AEMO to utilise the APIs. Please contact WA Prudentials and Settlements if you require a certificate (see Section 1.5). Web certificates are issued by Digicert and are replaced annually. Rule Participants using web services should ensure their systems trust certificates issued by this authority.

API information	URL
Swagger documentation	https://wems.aemo.com.au/prudential/api/docs
	https://wems-mkt.aemo.com.au/prudential/api/docs
Hostnames	https://wems.aemo.com.au/mpi/ws/prudential
	https://wems-mkt.aemo.com.au/mpi/ws/prudential