AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

WEMS Release Notes: Prudential Service 1.4

August 2020

Important notice

PURPOSE

The Australian Energy Market Operator (AEMO) has prepared this document to provide information about changes incorporated in the latest release to the Wholesale Electricity Market System (WEMS) as at the date of publication.

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VERSION CONTROL

Version	Release date	Changes
1.0	07/08/2020	Initial Publication for Prudential 1.4 Release
1.1	18/08/2020	Update publication with final build.

DOCUMENT APPROVAL

Name	Position	Date
Martin Maticka	Group Manager, WA Markets	07/08/2020

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Contents

1.	**Introduction**	**5**
1.1	Overview	5
1.2	Supporting documentation	5
1.3	WEMS version summary	5
1.4	Abbreviations	5
1.5	Status legend	6
2.	**Prudential Service**	**7**
2.1	Background	7
2.2	Accessing the New Prudential Service	7
3.	**Prudential Monitoring**	**8**
3.1	Overview	8
3.2	Downloading the latest prudential calculation data	9
3.3	Prudential Monitoring Service web service documentation	11
4.	**Credit Support Screen**	**12**
4.1	Overview	12
4.2	Credit Support	12
4.3	Credit Limit	13
5.	**Go-Live**	**13**
6.	**Resolved Issues**	**15**

1. Introduction

1.1 Overview

These are the release notes for Prudential Services 1.4 (Build 1.4-780-3), WEMS 3.35 (Build 3.35-1513-4) and RCM 1.16 (Build 1.16-2984-1). This release of the WEMS application suite includes the changes to the various sub-systems required to ensure AEMO's compliance with AEMO Procedure Change AEPC_2020_06 including:

- A new dynamic Outstanding Amount calculation, based on the settlement calculations specified in the WEM Rules, using the latest operational data or estimates of operational data when that data is not available.
- A new user display that provides Market Participants with:
    - daily prudential monitoring parameters including Cumulative Estimated Exposure, Invoices not paid, Prepayments, Outstanding Amount, Credit Limit, Credit Support, Trading Limit and Trading Margin to review the prudential calculation results; and
    - access to a files and APIs that provide prudential parameters such as the inputs and outputs of the Cumulative Estimated Exposure calculation to reconcile against the WEM Metering, Settlement and Prudential Calculation Formulation document; and
- A new user display that provides Market Participants with details in relation to the Credit Limit reviews and their Credit Support arrangements.

The system changes under this release are described in the sections below.

1.2 Supporting documentation

- WEM Metering, Settlement and Prudential Calculation Formulation
- WEMS MPI User Guide
- WEMS Report and Web Service Specification

1.3 WEMS version summary

Table 1 summarises the changes in version post deployment of this release.

Table 1 WEMS Version Summary

Application	Current version	New version
WEMS	3.35 (Build 3.35-1513-3)	3.35-1513-4
Prudential Service	1.3 (Build 1.3-735-13)	1.4-780-3
RCM	1.15 (Build 1.15-2980-1)	1.16-2984-1

To view the current version of MPI, please navigate to **Help > About** in the MPI.

1.4 Abbreviations

Table 2 outlines the abbreviations used in this document.

Table 2 Abbreviations

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
API	Application Programming Interface
BMO	Balancing Merit Order
DSP	Demand Side Programme
MOSMI	Market Operator System Monitoring Interface
MPI	Market Participant Interface
PDS	Public Data Site
PCS	Product Configuration Specification
RCM	Reserve Capacity Mechanism
SQL	Structured Query Language
WEMS	Wholesale Electricity Market System

1.5 Status legend

Table 3 outlines the issue statuses used in this document.

Table 3 Status Legend

Status
Internal changes
Minimal or no impact to Market Participants
Needs Market Participants' attention. Potentially requires system or operational procedure changes.

2. Prudential Service

2.1 Background

AEMO has progressed amendments to Market Procedures (AEPC_2020_06[1]) to implement phase 2 of the project, which will improve the accuracy of the Outstanding Amount calculation. The updated Market Procedure has been accepted by AEMO and will become effective at 8:00 AM on 24 August 2020.

To implement these changes, AEMO has introduced the Prudential Service which performs the calculation of the new Outstanding Amount calculation introduced under AEPC_2020_06. The new Outstanding Amount calculation uses available data, or estimated data when required data is not available, in order to determine a Market Participant's Outstanding Amount on a daily basis.

For the avoidance of doubt, the existing Outstanding Amount calculation (found under the WEMS > Settlements > Prudential Security screen) will continue to be used by AEMO and should be used by Market Participants for all prudential obligations under the WEM Rules and current Market Procedure: Prudential Requirement (v7.0) until AEPC_2020_06 becomes effective at 8:00AM on 24 August 2020.

2.1.1 Prudential Service 1.3

On 2 July 2020 AEMO deployed Prudential Service 1.3 into the Production environment to enable a 4 week "Parallel Testing" period. The purpose of the testing period was to allow Market Participants to assess the accuracy of the proposed Outstanding Amount calculation to inform their feedback on the Market Procedure Change Proposal.

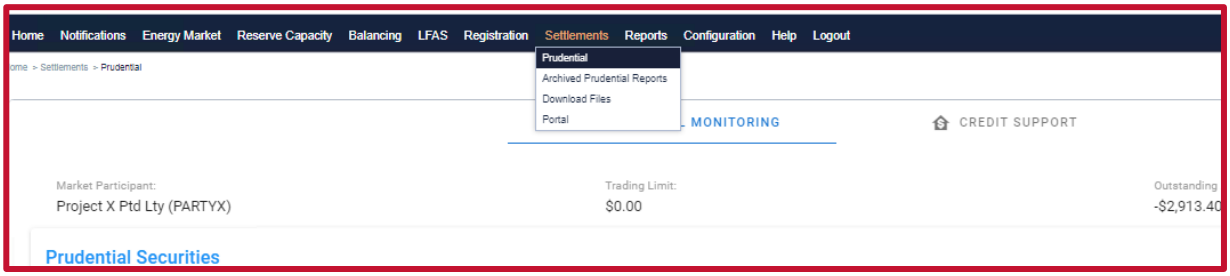
2.1.2 Prudential Service 1.4

This Prudential Service 1.4 release expands on the Prudential Service 1.3 release by enabling the functionality to allow AEMO and Market Participants to manage their prudential obligations using the new features.

For completeness, these release notes include the changes introduced in both Prudential Service 1.3 and 1.4.

2.2 Accessing the New Prudential Service

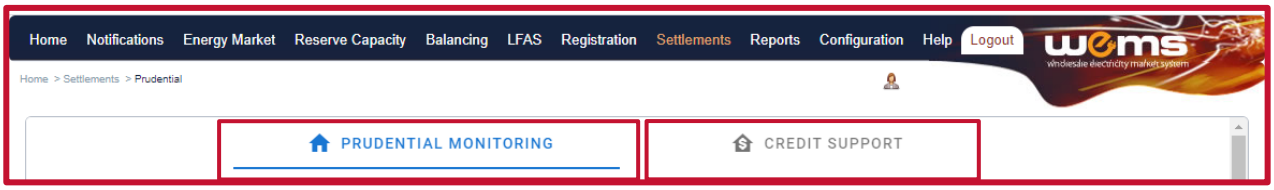
The new Prudential Service can be accessed from the Settlements menu drop down within the WEMS MPI, as per the below screenshot.



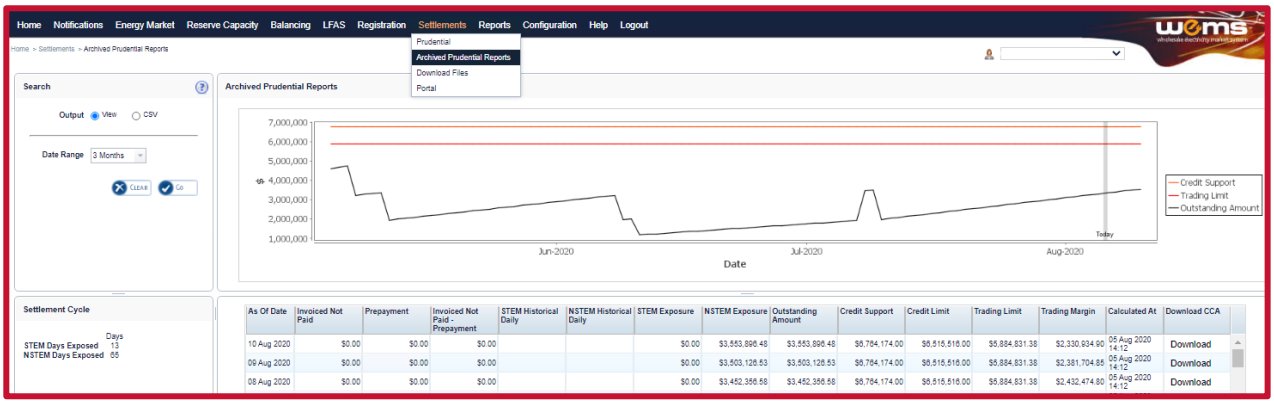
As per the below screenshot, the Prudential Service has two screens:

- **Prudential Monitoring**: This includes all daily prudential monitoring parameters required under the WEM Rules and Market Procedure including Cumulative Estimated Exposure, Invoices not paid, Prepayments, Outstanding Amount, Credit Limit, Credit Support, Trading Limit and Trading Margin. This screen replaces the current "Prudential Security" screen in WEMS.
- **Credit Support:** A new user display that provides Market Participants with details and documentation in relation to the Credit Limit reviews and their Credit Support arrangements.

[1] https://aemo.com.au/consultations/current-and-closed-consultations/aepc_2020_06



The current "Prudential Security" screen (shown below) has been renamed to 'Archived Prudential Reports' in order to differentiate the new screens.



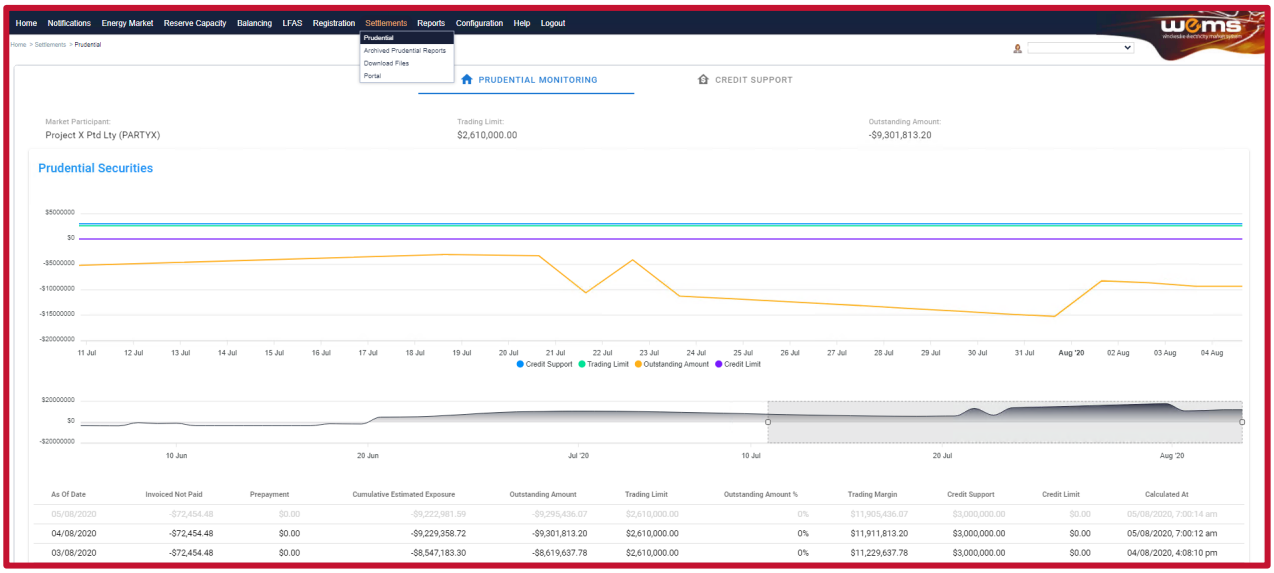
3. Prudential Monitoring

3.1 Overview

To view the results of the new Outstanding Amount calculation, navigate to the Prudential Monitoring screen within the new "Prudential" menu item. This new screen provides Market Participants with all information related to their relevant prudential calculations under the WEM Rules. Specifically, it will provide Market Participants with:

- Credit Support provided by the Market Participant in accordance with clause 2.38.1 of the WEM Rules.
- Trading Limit calculated in accordance with clause 2.39.1 of the WEM Rules;
- Outstanding Amount calculated in accordance with clause 2.40.1 of the WEM Rules and section 5.1 of the new approved Market Procedure: Prudential Requirements;
- Credit Limit as per the most recent determination made by AEMO under clause 2.37.1 of the WEM Rules; and
- Trading Margin calculated in accordance with clause 2.41.1 of the WEM Rules.

This information is provided in the Prudential Securities chart and in a related table.

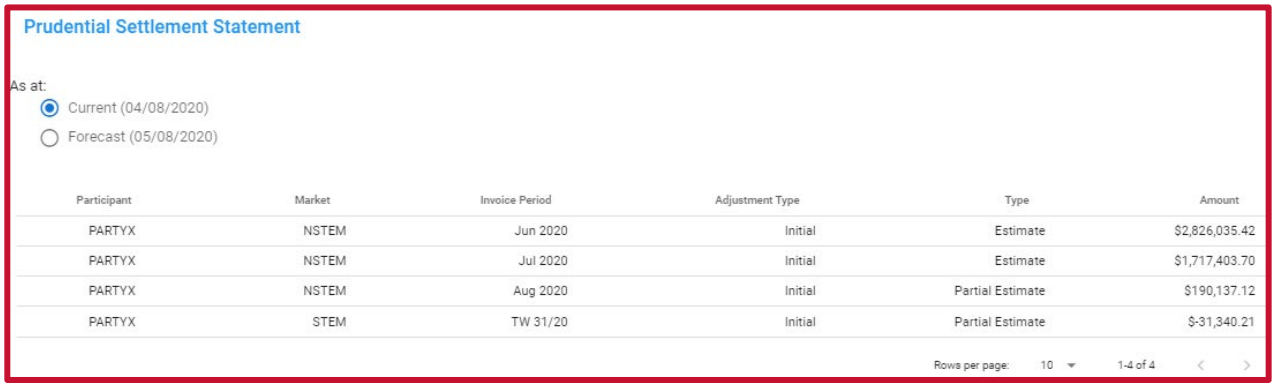


Although the calculation time may vary, the Cumulative Estimated Exposure is anticipated to be made available by 12 noon each day. All other information on the Prudential screen (e.g. Prepayment and Invoiced Not Paid) is updated every hour (on the hour) by a scheduled process.

The Prudential Monitoring screen includes the "Prudential Settlement Statement" table which provides Market Participants a breakdown of their Cumulative Estimated Exposure by invoice period.

For example, on 4 August 2020, there are 64 days of Non-STEM exposure and 5 days of STEM exposure contributing to the Cumulative Estimated Exposure value. This would be broken down into the following invoicing periods:

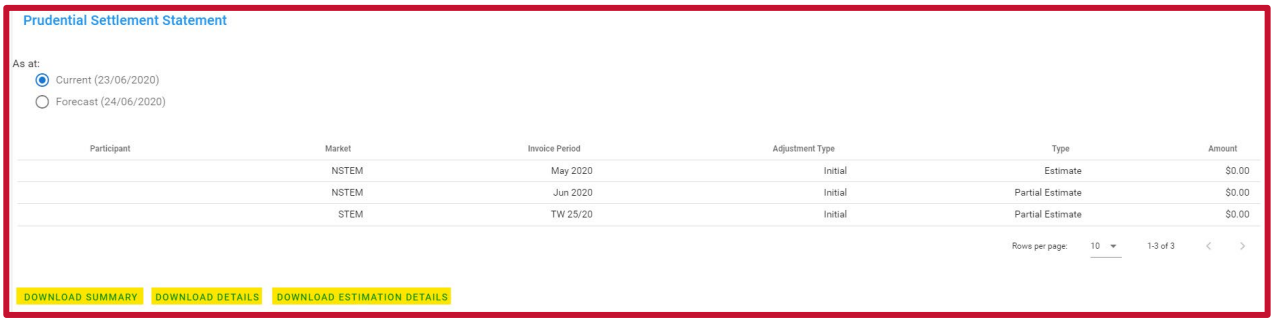
- 30 days of Non-STEM exposure in June 2020
- 31 days of Non-STEM exposure in July 2020
- 3 days of Non-STEM exposure in August 2020
- 5 days of STEM exposure in TW 31/20



3.2 Downloading the latest prudential calculation data

On the Prudential screen three new buttons are provided to download the underlying data used in the outstanding amount calculation for the latest As of Date.

Each button provides the user with the resultant information as determined by the 'Current' or 'Forecast' radio button. The screenshot below shows the buttons that generate the files.



- **Summary File**: Contains the summary information of the calculation at the highest level of the calculation for the selected 'As at' date. This data is contained within a single CSV file, which contains data for each market (STEM and Non-STEM) for each Trading Day within the exposed period. This data is at a similar level to the line items on Market Participants' invoices.

  An example of a summary file is below:

```
As of Date,Participant,Market,Variable,Timestamp,P or C,GST Applicable,Value
"2020-06-23","PARTYX","NSTEM","CASSR_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","COFFC_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","DIPT3_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","LFMC_P_D","2020-05-01","Charge","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","SRAC_P_D","2020-05-01","Charge","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","CASD_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","COCC_P_D","2020-05-01","Charge","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","CONC_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","DSMCCSA_P_D","2020-05-01","Payment","Y","0.00000000"
"2020-06-23","PARTYX","NSTEM","MFSAD_P_D","2020-05-01","Charge","N","0.00000000"
"2020-06-23","PARTYX","NSTEM","RFSAD_P_D","2020-05-01","Charge","N","0.00000000"
```

- **Detailed File**: Contains the detailed information of the calculation including all values used as inputs and the values resulting from the calculated variables under the WEM Rules, for all exposed days up to the 'As at' date. This data is presented as a compressed zip containing in multiple CSV files, with a single file relating to a market (STEM or Non-STEM) for a single Trading Day. This data is intended to be used by Market Participants in conjunction with the WEM Metering, Settlement and Prudential Calculation Specification[2] to allow them to reconcile the calculation. The data is at a similar level to the data in Market Participants' PIR files.

  An example of a detailed file is a below:

```
As of Date,Participant,Settlement Trading Day,Variable,Scope,Timestamp,Value
"2020-06-23","PARTYX","2020-05-01","MAXPGR_P_CY","PARTYX","2019-10-01","0.0"
"2020-06-23","PARTYX","2020-05-01","DSMRCP_G_CY","Global","2019-10-01","16990.38"
"2020-06-23","PARTYX","2020-05-01","DSMRCP_G_M","Global","2019-10-01","1415.865"
"2020-06-23","PARTYX","2020-05-01","RCP_G_CY","Global","2019-10-01","126683.47"
"2020-06-23","PARTYX","2020-05-01","RCP_G_M","Global","2019-10-01","10556.95583333"
"2020-06-23","PARTYX","2020-05-01","TDTM_G_M","Global","2019-10-01","31.0"
"2020-06-23","PARTYX","2020-05-01","MAXPGR_P_D","PARTYX","2019-10-01","0.0"
"2020-06-23","PARTYX","2020-05-01","RCP_G_D","Global","2019-10-01","340.54696237"
"2020-06-23","PARTYX","2020-05-01","DSMRCP_G_D","Global","2019-10-01","45.67306452"
"2020-06-23","PARTYX","2020-05-01","RCP_G_D","Global","2019-10-02","340.54696237"
"2020-06-23","PARTYX","2020-05-01","DSMRCP_G_D","Global","2019-10-02","45.67306452"
"2020-06-23","PARTYX","2020-05-01","MAXPGR_P_D","PARTYX","2019-10-02","0.0"
"2020-06-23","PARTYX","2020-05-01","MAXPGR_P_D","PARTYX","2019-10-03","0.0"
```

[2] The current version of this document can be found at https://aemo.com.au/en/energy-systems/electricity/wholesale-electricity-market-wem/procedures-policies-and-guides/guides

- **Estimation File**: Contains the detailed information of settlement input estimation calculations, for all exposed days up to the 'As at' date, based on the Market Procedure: Prudential Requirements and detailed in the WEM Metering, Settlement and Prudential Calculation Specification. This data is presented at a similar level to the Detailed File outlined above.

  An example of an estimation file is below:

```
As of Date,Participant,Settlement Trading Day,Variable,Scope,Timestamp,Value
"2020-06-23","PARTYX","2020-02-01","_CASD_P_M","PARTYX","2020-02-01","0.0"
"2020-06-23","PARTYX","2020-02-01","_CASR_P_M","PARTYX","2020-02-01","0.0"
"2020-06-23","PARTYX","2020-02-01","CASL_P_M","PARTYX","2020-02-01","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 08:00","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 08:30","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 09:00","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 09:30","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 10:00","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 10:30","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 11:00","0.0"
"2020-06-23","PARTYX","2020-02-01","CASSRQmwh_P_I","PARTYX","2020-01-31 11:30","0.0"
```

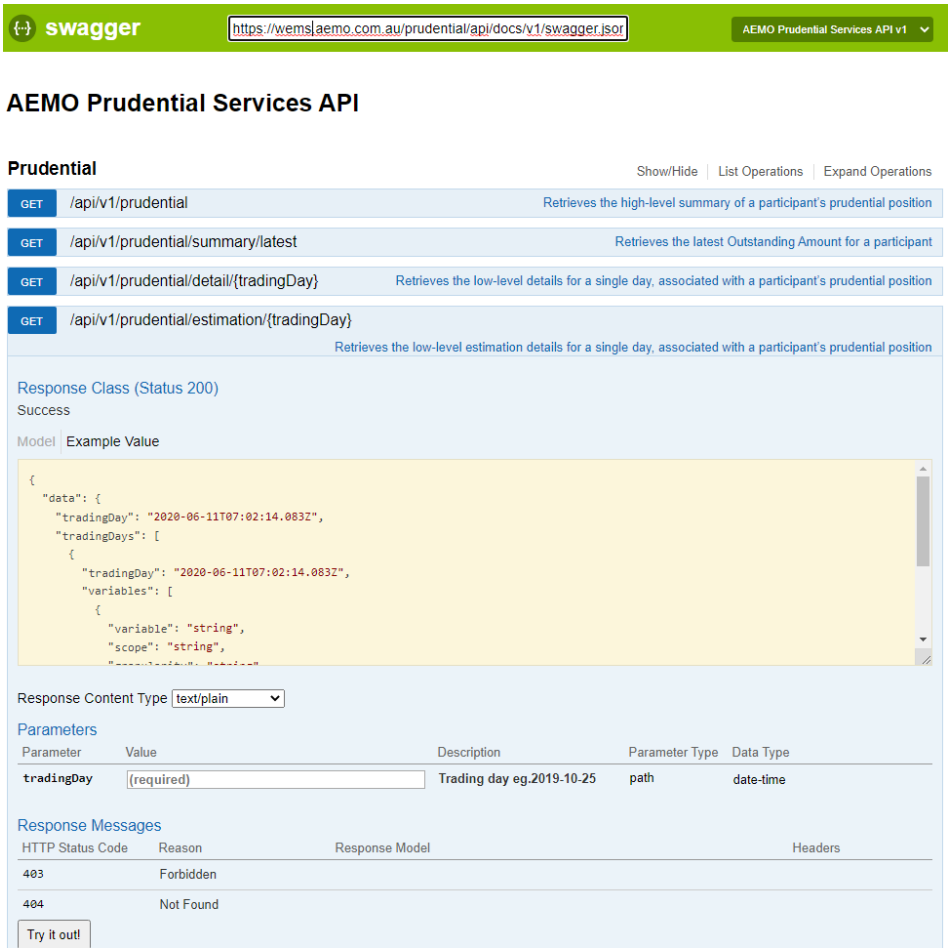
Due to the volume of data within the files it can take minutes to generate.

3.3 Prudential Monitoring Service web service documentation

Market Participants can choose to obtain the results of the Prudential Service calculation from the provided RESTful web services. Documentation for the web service is provided using the swagger documentation framework and available from: https://wems.aemo.com.au/prudential/api/docs/

There are 4 webservices that provide participants with the following data:

- /api/v1/prudential/summary/latest
  Provides just the current Outstanding Amount and Trading Margin for the participant.
- /api/v1/prudential
  Provides a high-level summary of a participants prudential position for a given date. This data is the same as that in the prudential summary file outlined in the previous section.
- /api/v1/prudential/detail
  Provides the complete data set of all input and output variables used in the Outstanding Amount calculation. This data is the same as that in the prudential details file outlined in the previous section. Does not include any inputs used in to determine estimated input values.
- /api/v1/prudential/estimation
  Provides the complete data set of all input values used in the determination of estimated values. This data is the same as that in the estimation file as outlined in the previous section.



4. Credit Support Screen

4.1 Overview

An improvement introduced in Prudential Service 1.4 is the new screen to provide greater visibility of the make-up of Market Participant's Credit Limit and Credit Support. To view the Credit Limit and Credit Support, navigate to the "Credit Support" screen within the new "Prudential" menu item.

The Credit Support screen provides:

- the current and historic breakdown of a Market Participants Credit Support instruments (Bank Guarantee or Security Deposits); and
- the current and historic details of Credit Limits for the Market Participant as determined by AEMO.

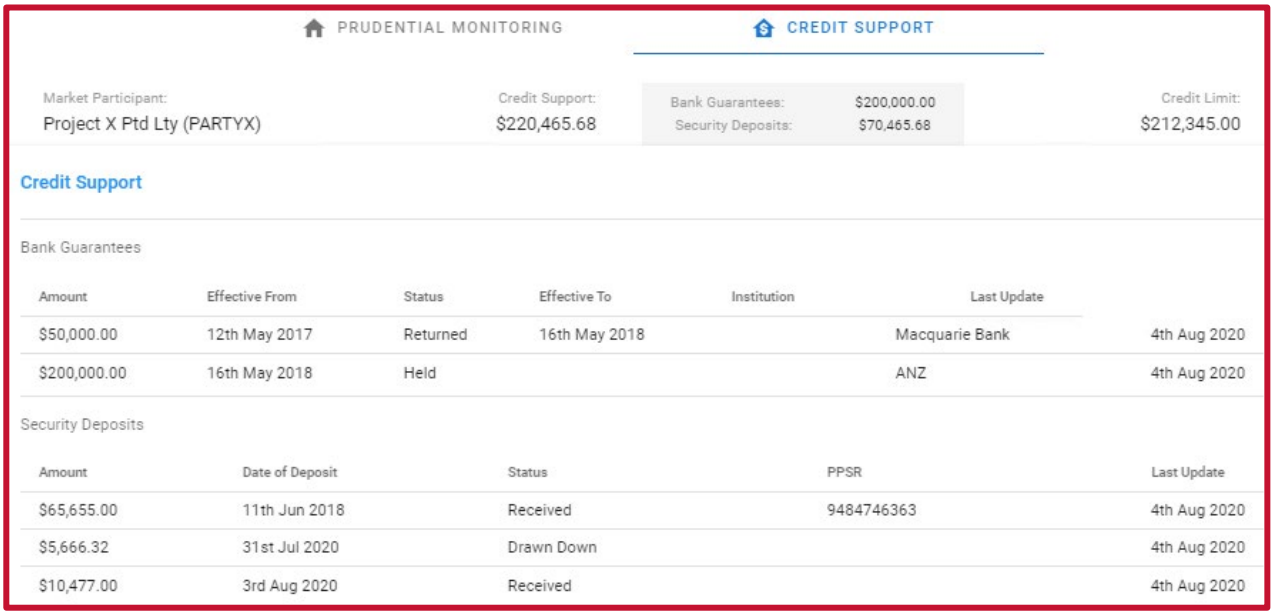
AEMO will transition current Credit Limit and Credit Support details into the new screen. Historic details will not be available but will be maintained going forward.

4.2 Credit Support

The Credit Support table in the Credit Support screen provides the current and historic breakdown of a Market Participants Credit Support instruments (Bank Guarantee or Security Deposits) including amounts, status and effective dates.

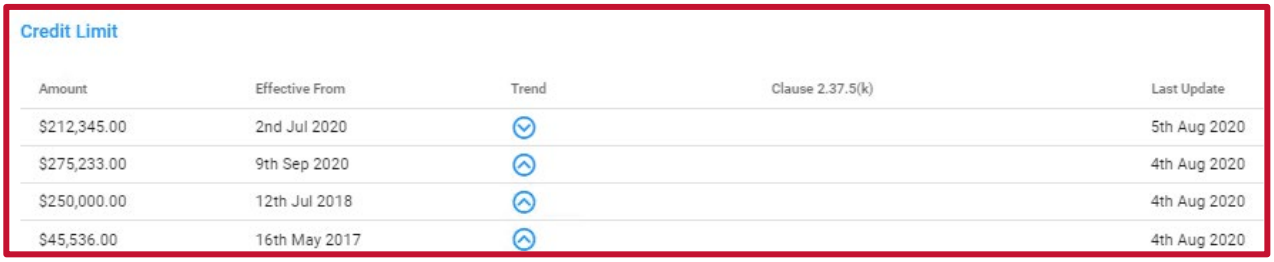
The effective Credit Support is determined as any instruments currently held by AEMO as listed in the Credit Support section with the '*Executed*' state.

The history of Credit Support instruments will be available as indicated by a *'Returned'* or *'Drawn Down'* state, to indicate the action AEMO had taken for that instrument.



4.3 Credit Limit

The Credit Limit table in the Credit Support screen provides the current and historic details of Credit Limits for the Market Participant as determined by AEMO. The effective Credit Limit is determined by the *'Effective Date'* as applicable from that date until the next *'Effective Date'*.



5. Go-Live

AEMO provided Market Participants with a 4 week period (2 July – 31 July) in which to observe the accuracy of the proposed new Outstanding Amount calculation using real production data. The release of Prudential Service 1.4 provides minor enhancements to that release which can be tested during the normal Market Trial period.

The release of Prudential Service 1.4 is required to implement the approved changes to the Market Procedure: Prudential Requirements and the Market Procedure: Capacity Credit Allocation in Procedure Change AEPC_2020_06.

Implementation of these changes will require the following actions which AEMO will undertake:

- Delete any information related to the testing of the Prudential Service application in Market Trial and Production at the time of deployment.
- Specify system toggles to migrate services from the existing Prudential Security calculation to the new Prudential Service calculation. These toggles will be specified as:
    - 8:00 AM on the date following the deployment in Market Trial.
    - 8:00 AM on 24 August 2020, the date Procedure Change AEPC_2020_06 becomes effective.
- Perform any necessary pre-calculations to provide Market Participants with an Outstanding Amount at 8:00 AM on 24 August 2020, the date Procedure Change AEPC_2020_06 becomes effective.

AEMO encourages Market Participants to view and use the new functionality in the Market Trial environment following the availability of this release.

Any queries, issues or feedback can be provided to the WA Market Operations team at wa.operations@aemo.com.au.

6. Resolved Issues

In addition to the functionality above, the following issues have been resolved in this release.

	Reference	Summary	Resolution
●	ROPE-354	Capacity Credit Allocations (CCA) required to check prudential exposure against new Outstanding Amount calculation.	Changes to the RCM application have set a toggle to enable the prudential check of the CCA against the new Outstanding Amount calculation when the Market Procedure: Capacity Credit Allocations becomes effective.
●	ROPE-1240	Summary values of Trading Limit and Outstanding Amount (displayed separately on prudential screen) were incorrectly using forecast information.	Code change to ensure the summary values are populated from the most recent complete current Outstanding Amount calculation (and not the forecast calculation).
●	ROPE-1235	Downloading of the prudential results via the UI is not reflecting the 'Current' or 'Forecast' radio buttons.	Code change to link each of the file download buttons with the appropriate radio button. Current radio button will download the selected information for all exposed days used to determine the current Outstanding Amount calculation. Forecast radio button will download the selected information for all exposed days used to determine the forecast Outstanding Amount calculation.
●	ROPE-1213	Downloaded csv files with prudential results do not reflect the radio button in the filename.	Each of the downloaded csv files will now reflect the selected radio button in the filename. e.g PARTYX_20200702_FORECAST_2020070223004523.csv
●	ROPE-1249	Prudential graph does not display same data as table	Code change to the UI to ensure the values indicated on the graph map directly to the corresponding values indicated in the table on the Market Participants prudential summary screen.
●	RCPRICE-88	Reserve Capacity Security transactions saved in RCM are not associated with the correct Trading Day.	Change code to ensure RC Security transactions are stored with a timestamp of 8am to align with the Trading Day.