Draft EMMS Technical Specification – 5MS – Prudentials

0.02 Draft October 2019

Important Notice

PURPOSE & AUDIENCE

This document describes the technical changes required to participant's systems for the AEMO Release Schedule - System Month Year (Release). The Australian Energy Market Operator (AEMO) provides this information as a service targeting business analysts and IT staff in participant organisations. It provides guidance about the changes to their market systems under the National Gas or Electricity Rules (Rules), as at the date of publication.

HOW TO USE THIS DOCUMENT

- If you have questions about the business aspects of these changes, please see Consultations on AEMO's website.
- The references listed throughout this document are primary resources and take precedence over this document.
- Unless otherwise stated, you can find resources mentioned in this guide on AEMO's website.
- Text in this format is a link to related information.
- **Text in this format**, indicates a reference to a document on AEMO's website.
- Text in this format is an action to perform in the MSATS Web Portal.
- This document is written in plain language for easy reading. Where there is a discrepancy between the Rules and information or a term in this document, the Rules take precedence.
- Glossary Terms are capitalised and have the meanings listed against them in the Glossary.
- Rules terms defined in the NER are listed in the Rules Terms section.

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VERSION HISTORY

0.02 Initial draft of the Prudential and Estimation technical specification includes the APIs for NEM Prudential Dashboard and the NEM Prudential Forecast.

DOCUMENTS MADE OBSOLETE

The release of this document changes only the version of Draft EMMS Technical Specification – 5MS – Prudentials.

SUPPORT HUB

To contact AEMO's Support Hub use Contact Us on AEMO's website or Phone: 1300 AEMO 00 (1300 236 600) and follow the prompts.

Contents

1. Introduction

The Draft EMMS Technical Specification – 5MS – Prudentials Release is part of the Five-Minute Settlement (5MS) project and includes changes related to participants' IT systems. The release schedule and technical specification describes the projects planned by AEMO from a participant perspective.

1.1 Overview

This section details the 5MS changes to Settlements and AEMO's real-time operational systems.

1.1.1 Five Minute Settlement (5MS)

On 28 November 2017, the AEMC made a final rule to alter the settlement period for the wholesale electricity spot market from 30 minutes to five minutes to align with the dispatch period. The changes are effective from 1 July 2021.

> For more information, see the 5MS Systems High-Level Impact Assessment (HLIA) document.

The AEMC determined the five-minute settlement provides a better price signal for investment in fast response technologies, such as batteries, new gas peaking generation, and demand response. The alignment of the operational dispatch and financial settlement periods are expected to lead to more efficient bidding, operational decisions, and investment.

The 5MS updates are divided into different workstreams based on functionality as follows:

- Dispatch and Bidding
- Retail
- Settlements

1.2 Audience

AEMO provides this information as a service targeting business analysts and IT staff in participant organisations.

1.3 Rule and procedure changes

Type	Details
Credit Limit Procedures	Provides details on how AEMO determines the prudential settings for each Market Participant so that the Prudential standard is met for the National Electricity Market (NEM)

1.4   Proposed timeline

For the schedule and the Program timeline, see the Five Minute Settlement and Global Settlement page on the AEMO website.

1.5   Approval to change

The changes are continually discussed and updated as a part of the 5MS Systems Working Group and other 5MS Consulting Forum meetings. There is no approval to change required from participant change controllers at this time.

Amendments to the Rules regarding five-minute settlements are published on the AEMC website: National Electricity Amendment (Five-minute settlement rule) 2017.

Amendments to the Rules regarding Global Settlements are published on the AEMC website: National Electricity Amendment (Global Settlement and Market Reconciliation) 2018.

2. Prudential Overview

The Settlements system is part of the Electricity Market Management System (EMMS) that depends on information from Registration and Dispatch systems and calculates amounts owing to or owed by each party including AEMO.

This document details the 5MS and GS changes to the Settlements stream.

> **The following changes are under consultation and not definite at this stage.**

2.1 Settlements stream

The Settlements stream includes Settlements, Billing, Invoicing, Reallocations, and Prudentials. This version of the document focuses on the updates to the Prudentials packages.

From 1 July 2021, the following services are impacted:

- Transactions are calculated every five minutes.
- Settlement estimation calculates energy transactions every five minutes.
- The inter-regional and intra-regional residue surplus are calculated on a five-minute basis.
- Several non-energy transactions, such as market Ancillary Services (such as FCAS) are completed using five-minute energy volumes.

2.2 Prudential system

The NEM Prudential systems provides participants information on the money they are owed. An essential element of the prudential systems is the concept of Outstandings, which is the total amount owing but not yet paid or settled. It consists of the following:

- NEM Prudential Dashboard interface which displays the latest prudential information. The dashboard is updated throughout the settlement day, including weekends and public holidays.
- NEM Prudential Forecast interface which provides participants with a forecast of their expected prudential position for the next NEM business day, allowing participants to better manage their prudential obligations.

The NEM Prudential systems provides the participants a web-based dashboard for users to:

- View their current prudential position with AEMO
- View a forecast of their prudential position as of the next business day
- Calculate the future credit support based on the input variables provided by the user.

2.3   Updates for 5MS

All prudential information is now based on five-minute data volumes. For reallocations, calculations in Prudential system uses 5-minute data after July 1, 2021.

The following changes are under consultation and not definite at this stage.

AEMO exposes new and updated APIs allowing participants to access their Prudential Dashboard and Prudential Forecast details via APIs. The next version of this document will include more APIs for Credit Support.

The Prudential web (Prudential Dashboard, Prudential Forecast, and Credit Support) interfaces are updated to align with current AEMO standards.

2.4   API design summary

API Name	Description
getPrudentialCompanySummary	Retrieve the company details for the given participant ID.
getCumulativePrice	Retrieve the cumulative price per region.
getPrudentialCalendar	Retrieve the details for a Billing calendar.
getPrudentialRunVersion	Retrieve the latest prudential run details.
getForecaseCompanySummary	Retrieve the company details for the given participant ID, forecast run number and date.
getForecastRegionalPrice	Retrieve the regional price details for the given forecast run number and date.
getForecastRevenue	Retrieve the regional revenue details for the given forecast run number and date.
getForecastRunVersion	Retrieve the latest forecast prudential run details.

3. Prudential Systems API Design

The following chapter lists the new Prudential APIs, the validation rules, and the request and response structure for the Prudential APIs.

This is not an exhaustive list of all Prudential APIs. The final version of this document will include new and modified APIs.

> **For all information on accessing and using the APIs, see Guide to AEMO's APIs.**

3.1 getPrudentailCompanySummary API

The getPrudentialCompanySummary API retrieves a single company's prudential details along with its associated properties including Historic Days, Security Deposit, Outstandings, Pay Amount, Pay Nomination, SDA Interest Rates, and Reallocations data. The participantId request parameter is used to get the company prudential details matching the given ID.

> **The following changes are under consultation and not definite at this stage.**

The request is validated by checking if the given participantId parameter is a registered participant with a valid parent company detail. If request validations fail, a response with an error message is returned to the client.

API name	getPrudentialCompanySummary
URL path	/NEMWholesale/Prudentials/getPrudentialCompanySummary
Method	GET
Authorisation mode	Participant specific
Request content	Query parameters: • prudentialDate: [Mandatory] Date of the prudential run • prudentialRunNo: [Mandatory] Run number of the prudential run

Success response	Content Body:

```
{
  "data":
  {
  "prudentialDate": [datetime],
  "prudentialRunNo": [integer],
  "lastChanged": [datetime],
  "companySummary": {
    "companyId": [string],
    "todayOutstandingsPercent": [decimal],
    "maximumCreditLimit": [decimal],
    "prudentialMargin": [decimal],
    "tradingLimit": [decimal],
    "tradingMargin": [decimal],
    "outstandings": [decimal],
    "typicalAccrual": [decimal],
    "creditSupport": [decimal],
    "expostReallocBalance": [decimal],
    "securityDepositProvision": [decimal],
    "securityDepositOffset": [decimal],
    "securityDepositBalance": [decimal],
    "outstandingsReallocations": [decimal],
    "prudentialException": [bool],
    "historicDays": [
     {
       "calendarDate": [datetime],
       "runDateTime": [datetime],
       "historicOutstandings": [decimal],
       "historicCreditSupport": [decimal],
       "historicTradingLimit": [decimal]
     }],
    securityDeposits": [
     {
       "securityDepositId": [string],
       "participantId": [string],
       "lodgeDate": [datetime],
       "maturityDate": [datetime],
       "interestRate": [decimal],
       "interestAcctId": [string],
       "interestCalcType": [string],
       "amount": [decimal]
     }],
    "reallocations": [
     {
       "reallocationId": [string],
       "participantId": [string],
       "counterPartyId": [string],
       "startDate": [datetime],
       "endDate": [datetime],
       "reportStartDate": [datetime],
       "reportEndDate": [datetime],
       "amount": [decimal]
     }],
     outstandings": [
```

API name	getPrudentialCompanySummary
	<pre>{
"contractYear": [integer],
"weekNo": [integer],
"billRunNo": [string],
"runType": [string],
"companyOutstandingsAmount": [decimal],
"participants": [
{
"participantId": [string],
"participantOutstandingsAmount": [decimal]
}]
}],
"earlyPaymentNominations": [
{
"participantId": [string],
"paymentDate": [datetime],
"paymentMethodId": [string],
"paymentTypeId": [string],
"paymentMethodDescription": [string],
}],
"earlyPaymentAmounts": [
{
"contractYear": [integer],
"weekNo": [integer],
"earlyPaymentAmount": [decimal]
}],
"sdaFloatingInterestRates": [
{
"participantId": [string],
"interestAcctId": [string],
"effectiveDate": [datetime],
"interestRate": [decimal]
}]
}
}
}</pre>
Notes	

3.2   getCumulativePrice API

The getCumulativePrice API retrieves cumulative and average price for each region.

API name	getCumulativePrice
URL path	/NEMWholesale/Prudentials/getCumulativePrice
Method	GET
Authorisation mode	Authenticated user

API name	getCumulativePrice
Request content	No input necessary

Success response	Content Body:
	
	``json
	{
	  "data":
	  {
	    "cumulativePrices": [
	    {
	    "regionId": [string],
	    "cumulativePrice": [decimal],
	    "averagePrice": [decimal]
	    }]
	    }
	}
	``

Notes	

3.3   getPrudentailCalendar API

The getPrudentialCalendar API retrieves the Billing calendar entries for each Billing run contributing to the prudential Outstandings.

API name	getPrudentialCalendar
URL path	/NEMWholesale/Prudentials/getPrudentialCalendar
Method	GET
Authorisation mode	Authenticated user
Request content	Query parameters: • prudentialDate: [Mandatory] Date of the prudential run • prudentialRunNo: [Mandatory] Run number of the prudential run

Success response	Content Body:
	
	``json
	{
	  "data":
	  {
	    "calendarEntries": [
	    {
	    "billingPeriodId": [string],
	    "contractYear": [integer],
	    "weekNo": [integer],
	    "nextDate": [datetime]
	    }]
	    }
	}
	``

API name	getPrudentialCalendar
Notes	

3.4　　getPrudentialRunVersion API

The getPrudentialRunVersion API retrieves the latest prudential run number and date.

API name	getPrudentialRunVersion
URL path	/NEMWholesale/Prudentials/getPrudentialRunVersion
Method	GET
Authorisation mode	Authenticated user
Request content	No input necessary

Success response	Content Body:
	
	``
	{
	  "data":
	  {
	  "prudentialDate": [datetime],
	  "prudentialRunNo": [integer],
	  "latestTradingInterval": [datetime],
	  "lastChanged": [datetime]
	  }
	}
	``

Notes	

3.5　　getForecastCompanySummary API

The getForecastCompanySummary API retrieves the forecast prudential details for a single company, along with the associated properties including Trading Margin, Outstandings, POE data. The participantId request parameter is used to retrieve the company prudential matching the given ID for the forecastRun and forecastDate parameters.

The request is validated by checking if the given participantId parameter is a registered participant with a valid parent company detail. If request validations fail, a response with an error message is returned to the client.

The following changes are under consultation and not definite at this stage.

API name	getForecastCompanySummary
URL path	/NEMWholesale/Prudentials/getForecastCompanySummary

API name	getForecastCompanySummary
Method	GET
Authorisation mode	Participant specific
Request content	Query parameters: • forecastDate: [Mandatory] Forecast date for the forecast run • forecastRunNo: [Mandatory] Forecast run number

Success response	Content Body:
	<pre>{
	  "data":
	  {
	    "companyId": [string],
	    "companyName": [string],
	    "currentTradingMargin": [decimal],
	    "currentOustandings": [decimal],
	    "poe10TradingMargin": [decimal],
	    "poe10Outstandings": [decimal],
	    "poe50TradingMargin": [decimal],
	    "poe50Outstandings": [decimal],
	    "poe90TradingMargin": [decimal],
	    "poe90Outstandings": [decimal]
	  }
	}</pre>

Notes	

3.6   getForecastRegionalPrice API

The getForecastRegionalPrice API retrieves regional price data for each PoE forecast type with the highest prices calculated for POE50 type and regional reference prices calculated for POE50 forecast type for each region. The forecastRun and forecastDate request parameters are used to retrieve the regional price data.

API name	getForecastRegionalPrice
URL path	/NEMWholesale/Prudentials/getForecastRegionalPrice
Method	GET
Authorisation mode	Authenticated user
Request content	Query parameters: • forecastDate: [Mandatory] Forecast date for the forecast run. • forecastRunNo: [Mandatory] Forecast run number.

API name	getForecastRegionalPrice

Success response	Content Body:
	
	``
	{
	  "data":
	  {
	    "regions": [
	    {
	    "highestPriceInterval": [datetime],
	    "highestRRP": [decimal],
	    "cumulativeRRP": [decimal],
	    "totalCurrentCumulativeDemand": [decimal],
	    "totalPOE10ForecastDemand": [decimal],
	    "totalPOE50ForecastDemand": [decimal],
	    "totalPOE90ForecastDemand": [decimal],
	    "regionId": [string],
	    "intervals": [
	    {
	      "intervalDateTime": [datetime],
	      "forecastDemand": [decimal],
	      "forecastRRP": [decimal]
	    }]
	    }]
	    }
	}
	``

Notes	

3.7   getForecastRevenue API

The getForecastRevenue API retrieves revenue data for the supplied forecastRunNo and forecastDate request parameters.

API name	getForecastRevenue
URL path	/NEMWholesale/Prudentials/getForecastRevenue
Method	GET
Authorisation mode	Authenticated user
Request content	Query parameters: • forecastDate: [Mandatory] Forecast date for the forecast run. • forecastRunNo: [Mandatory] Forecast run number.

API name	getForecastRevenue

Success response	Content Body:
	
	``
	{
	  "data":
	  {
	    "revenueSinceMidnight": [decimal],
	    "revenueLastHour": [decimal],
	    "revenueForecastForToday": [decimal]
	  }
	}
	``

Notes	

3.8   getForecastRunVersion API

The getForecastRunVersion API retrieves the latest forecast prudential run number and date.

API name	getForecastRunVersion
URL path	/NEMWholesale/Prudentials/getForecastRunVersion
Method	GET
Authorisation mode	Authenticated user
Request content	No input necessary

Success response	Content Body:
	
	``
	{
	  "data":
	  {
	   "forecastDate": [datetime],
	   "forecastRunNo": [integer],
	   "prudentialDate": [datetime],
	   "forecastRunDateTime": [datetime],
	   "prudentialRunDateTime": [datetime],
	   "forecastTradingStartInterval": [datetime],
	   "forecastTradingEndInterval": [datetime],
	   "forecastDispatchInterval": [datetime],
	   "forecastP5MinStartInterval": [datetime],
	   "forecastP5MinEndInterval": [datetime],
	   "forecastPDStartInterval": [datetime],
	   "forecastPDEndInterval": [datetime],
	   "forecastPDSensStartInterval": [datetime],
	   "forecastPDSensEndInterval": [datetime],
	   "nextStatementDate": [datetime]
	  }
	}
	``

API name	getForecastRunVersion
Notes	

4. Implementation

4.1 Transition

Participants are required to build APIs on their end to interact with the new 5MS Prudential APIs information.

This section is a draft and subject to the 5MS Readiness Workstream transition and cutover forums.

4.2 Implications

To maintain systems in line with AEMO's Market systems, participants need to:

- Review the changes implemented as part of this Release and assess the impact on their market systems.
- Change their systems prior to the implementation of this Release.
- Schedule staff and resources to upgrade their market systems for the production implementation of this Release.

4.3 Risks

- Participants not subscribed to the latest versions of files using the Data Subscriptions web application will not receive the new data.

4.4 Upgrade options

From a wholesale energy market system's focus, participants need to:

1. Review and assess the impact on their market systems with respect to the changes implemented as part of this Release.

2. Plan to upgrade their installations to the latest versions to realise benefits from the new functionality, operate against newly supported platforms, and to maintain ongoing support from AEMO.

3. Schedule staff and resources to upgrade their market systems from the implementation of this Release. To maintain systems in-line with AEMO's market systems, AEMO recommends upgrading within six months of the implementation date.

4. Change their systems prior to the deployment of this Release to ensure they are up-to-date. AEMO recommends participants' wholesale market systems are compliant with the latest software versions.

4.5 What happens if I do not upgrade?

If participants' systems are compliant with AEMO's supported configuration defined in the DI Framework and Glossary, this Release does not impact MMS Data Model systems immediately. Depending on participant's systems, not upgrading may result in the following issues:

> **AEMO encourages participants to make use of the four-week pre-production period, to assess and test any impact to their market systems and business processes. Participants using data replication products critical to their business are strongly advised to participate in the pre-production rollout and testing period.**

- Participant's database does not receive the new fields or tables because the Data Model elements are not created.
- Participants not subscribed to the latest versions of files using the Data Subscriptions web application will not receive the new data.
- Content in legacy files may change after deployment of this Release.

If participants have a system dependency on the formats of the non-MMS Data Model reports they need to manage these dependencies using the detail provided in this technical specification. Participants need to review and assess the impact on their market systems with respect to the changes implemented as part of this Release.

5. References

You can find the following resources on AEMO's website:

Data Interchange Framework and Glossary: provides important information about upgrading your Data Interchange (DI) environment, explains DI terms, and DI related resources. Please read this guide in conjunction with this technical specification.

Guide to AEMO's e-Hub APIs: Provides details about using AEMO's e-Hub as an interface to communicate information with AEMO. It assists Wholesale electricity and gas participants developing their own APIs.

Guide to Electricity Information Systems: Provides guidance for *Registered* Participants and interested parties about AEMO's participant electricity market systems.

Guide to User Rights Management: Assists participant administrators (PAs) to use the user rights management functions in the MSATS Web Portal.

6. Rules Terms

You can find the following terms defined in the National Electricity Rules (NER):

Term
AEMC
AEMO
AEMO Markets Portal
AEMO Website
Confidential Information
Market
Market Participant
NEM
Outstandings
Participants
Product
Prudential Approved Participant
Prudential Exposure
Reallocations
Region
Regional reference prices
Registered Participant
Trading Margin
Trading Position
Unit Category

Term
Units

7. Glossary

Abbreviation/Term	Explanation
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
EMMS	Electricity Market Management System; software, hardware, network and related processes to implement the wholesale energy market
NEM	National Electricity Market
NER	National Electricity Rules
NMI	National Metering Identifier for electricity meters
MW	Megawatt
Release	Draft EMMS Technical Specification – 5MS – Prudentials

8. Index