NEM SETTLEMENT ESTIMATES POLICY

PREPARED BY:	AEMO Market Management
VERSION:	32.0
EFFECTIVE DATE:	01 OctoberJuly 2021
STATUS:	FINAL

Approved for distribution and use by:

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VERSION RELEASE HISTORY

Version	Effective Date	Summary of Changes
1.0	10 Aug 2012	• Initial Version of NEM Settlement Estimates Policy. With effect from the Effective Date determined under clause 1, this Policy and the NEM Settlement Revisions Policy supersede the NEM Settlement Estimates and Revisions Policy version 3A, published on 15 November 2009.
1.1	13 Mar 2013	• Minor amendments to NEM Settlement Estimates Policy to include effective date of 15 March 2013.
2.0	01 July 2021	• Re-arranged information to comply with AEMOs new external Procedure template. • Replaced Section 5 in version 1.1 with Section 2 in the current version. • Updated references to half-hourly or thirty-minute to five-minute (*trading interval*). • Updated to include UFE estimations for prudential purposes in Section 3.1. •
3.0	01 October 2021	• Add provisions for for estimating settlement results for the purpose of prudential estimation for Demand Response Service Providers under the Wholesale Demand Response Mechanism. • Update 5MS start date.

CONTENTS

1. INTRODUCTION

1.1. Purpose and scope

This is the NEM Settlement Estimates Policy made under clause 3.15.12(c) of the National Electricity Rules (**NER**) (**Procedures**).

These Procedures have effect only for the purposes set out in the NER. The National Electricity Law and the NER prevail over these Procedures to the extent of any inconsistency.

These Procedures set out:

1. the principles and process for calculating *estimated settlement amounts* when normal processing is not possible.

~~2.~~ AEMO's process for estimating settlement ~~results~~ amounts for the purpose of prudential estimation under Rule 3.3.9.

~~3.~~2. ~~These Procedures commence on and from 01 July 2021.~~

1.2. Definitions and interpretation

1.2.1. Glossary

Terms defined in the National Electricity Law and the NER have the same meanings in these Procedures unless otherwise specified in this clause.

Terms defined in the NER are intended to be identified in these Procedures by italicising them, but failure to italicise a defined term does not affect its meaning.

The words, phrases and abbreviations in the table below have the meanings set out opposite them when used in these Procedures.

Term	Definition
EMS	Energy Management System
EMMS	Electricity Market Management System
MDP	*Metering Data Provider*
MDM	Meter Data Management
MSATS	Market Settlement and Transfer Solution
NER	National Electricity Rules
NMI	National Metering Identifier
SCADA	Supervisory Control and Data Acquisition
TNI	Transmission Node Identifier
TNISF	Wholesale Connection Point Scaling Factor
UFE	Unaccounted for *energy*

1.2.2. Interpretation

These Procedures are subject to the principles of interpretation set out in Schedule 2 of the National Electricity Law.

1.3. Related documents

Title/Reference	Description/Location
Market Suspension and System Failure Procedure	Explains how AEMO manages situations where market systems fail, or which may require suspension of the *spot market*. Market Suspension and System Failure Procedure
Service Level Procedure: Metering Data Provision Services	Sets out MDP's obligations in relation to system architecture and administration Service Level Procedure: Metering Data Provision Services
Metrology Procedure Part B: Metering Data Validation, Substitution and Estimation	Sets out the procedure for metering data validation, substitution and estimation for MDP Metrology Procedure Part B: Metering Data Validation, Substitution and Estimation
MSATS Procedure: MDM Procedures	Sets out AEMO obligations with regards to preparation of *settlements* ready data to facilitate the issue of *settlement statements*. MSATS Procedure: MDM Procedures

2. SETTLEMENT PROCESS DURING SYSTEM AND COMMUNICATIONS FAILURES

AEMO has developed IT systems and databases, business processes and Procedures to manage the risks of a range of system or communications outage incidents impacting normal settlement processes.

In all scenarios other than a *market suspension*, AEMO can produce *preliminary and final settlement statements* without the need to calculate *estimated settlement amounts*.

2.1. Failure of EMMS

Services will be transferred to another back-up server on the same site or a back-up server on an alternative site in accordance with clause 3 of the Market Suspension and System Failure Procedure.

If AEMO is unable to operate the *spot market* due to EMMS failures AEMO will suspend the NEM in accordance with the Market Suspension and System Failure Procedure.

2.2. Failure of Communications Impacting the Delivery of *Metering Data*

Clause 6 of the Service Level Procedure: Metering Data Provision Services sets out MDP's obligations in relation to system architecture and administration. If a system failure occurs the MDP must ensure that its *metering data* services database is restored to operational service within the required timeframe in accordance with clause 6.3.5 of the above Procedure.

Clause 7.10.2 of the NER sets out MDPs' obligations in relation to *metering data* management and storage. If an MPD's *metering data* fails to meet the required validation rules prescribed in Metrology Procedure Part B: Metering Data Validation, Substitution and Estimation AEMO will estimate and substitute the affected data in accordance with clause 7.11.2(c) of the NER and the MSATS Procedure: MDM Procedures.

2.3. Failure of MSATS

Services will be transferred to another back-up server on the same site or a back-up server on an alternative site.

2.4. Failure of EMMS and MSATS Supporting Databases

The relevant services will be transferred to another back-up server on the same site or a back-up server on an alternative site.

3. SETTLEMENT ESTIMATES FOR THE PURPOSE OF PRUDENTIAL ASSESSMENTS

Under clause 3.3.9 of the NER, AEMO is required to determine the *outstandings* of a *Market Participant* as a dollar amount. The *outstandings* is a key value used in the prudential assessment of a *Market Participant*. *Market Participants* are obliged under clause 3.3.11 of the NER to maintain their *outstandings* below their trading limit. Failure to do so can result in AEMO issuing a call notice.

The value of a *Market Participant*'s *outstandings* can be considered to be the aggregate of the absolute value of net settlement amounts payable in respect of any *billing period*, or part of a *billing period*, that has occurred but not yet been settled less security deposit funds held by AEMO in respect of the *Market Participant*.

Under clause 3.3.9 of the NER, the amounts used in the calculation of a *Market Participant*'s *outstandings* are the actual settlement amounts for *billing periods* where final statements have been issued by AEMO or AEMO's reasonable estimate of the settlement amounts for *billing periods* (where *final statements* have not been issued).

In practice, AEMO uses preliminary billing runs in the assessment of a *Market Participant*'s *outstandings* where these are available. For days where no preliminary billing run has been performed a settlement estimation process is required. The process followed by AEMO to estimate settlements data for the purposes of prudential assessment is described below.

3.1. UFE for Global Settlements

Where initial *metering data* and/or preliminary and final settlement data is available, AEMO will include the *Market Participant's* allocation of UFE in the settlement estimation for prudential purposes. Where no *metering data* is available, the UFE component will be assumed to be zero.

3.2. Settlement Estimation Process

The following is a hierarchy of available data which is to be applied for the purposes of determining settlement estimates where no preliminary billing run data is available. AEMO will develop and implement a set of data quality, *Market Participant* and wholesale *connection point* data parameters and validations to determine the highest level in the hierarchy that is of sufficient quality to be applied in the estimation of *settlement amounts*.

Energy data can be split into ~~three~~ four broad categories for the purposes of settlements estimation. These are generation for *Market Generators*, load for *Market Generators*, ~~and~~ load for *Market Customers* and wholesale demand response settlement quantity for *Demand Response Service Providers*. ~~.~~

For each of these ~~three~~ categories the settlement estimates are to be based on the following data sources in a decreasing order of preference relating to the accuracy of the data source.

3.2.1. Hierarchy of Data for Estimating Generation for *Market Generators*

1. Actual *metering data*

   A billing run is to be performed for each calendar day which will pick up the latest *metering data* available for all days for which there is yet to be a preliminary billing run.

2. SCADA data

   Generation is estimated directly from the NEM *dispatch* process with application of a static *regional* scaling factor to correct SCADA data for differences in point of measurement to *metering data*. SCADA data is used for *scheduled generating units* and *semi-scheduled generating units*, and *non-scheduled generating units* that have data available.

   AEMO will review the static *regional* scaling factors annually, publishing them on the AEMO website and notifying *Market Participants* when the factors are changed.

3.2.2. Hierarchy of Data for Estimating Load for *Market Generators*

1. Actual *metering data*

   A billing run is to be performed each calendar day which will pick up the latest *metering data* available for all days for which there is yet to be a preliminary billing run.

2. Estimated data based on like-day energy

   Load is estimated by scaling energy from a like-day for which actual *metering data* is available and applying a scaling factor derived from *regional dispatch* data.

3.2.3. Hierarchy of Data for Estimating Load for *Market Customers*

1. Actual *metering data*

   A billing run is to be performed each calendar day which will pick up the latest *metering data* available for all days for which there is yet to be a preliminary billing run.

2. TNI SCADA data

   If there is a single *Market Participant* consuming *energy* at the TNI then the SCADA data can be utilised where a one-to-one (SCADA to *connection point*) mapping is available. *Market Participants* can request AEMO to consider their suitability for using TNI data.

3. Estimated data generated for each *NMI* by the MDP in accordance with the Metrology Procedure Part B: Metering Data Validation, Substitution and Estimation.

4. Estimated data generated for each *NMI* by MSATS in accordance with the MSATS Procedure: MDM Procedures.

5. Estimated data based on like-day *energy* and wholesale connection point scaling factors (TNISFs)

   To estimate the previous day *energy*, a wholesale *connection point* scaling factor (TNISF) is applied to the like-day data for the *Market Participant*. The TNISF is calculated for each *trading interval* based on net *energy* purchase at the *connection point* and represented by the following equation.

$$TNISF = \frac{Wholesale\ EMS\ Energy\ Previous\ day}{Wholesale\ EMS\ Energy\ Like\ day}$$

   This estimation relies on a sufficient mapping between the wholesale *connection points* and the SCADA data in EMS.

6. Estimated data based on like-day *energy* and *regional* scaling factors with a *Market Participant* specific calculation refinement.

   The like-day f-minute *regional* scaling factor (SF) applied to the like-day data for the *Market Participant* (described in 7 below) can be refined using linear regression as illustrated below.

$$Market\ Participant\ SF = [Regional\ Scaling\ Factor \times \alpha] + \beta$$

7. Estimated data based on like-day energy and regional scaling factors

   To estimate the previous-day energy, a five-minute regional scaling factor (SF) is applied to the like-day data for the Market Participant. The SF is calculated based on the *regional dispatch* data and is represented by the equation below:

$$Regional\ Scaling\ Factor = \frac{Regional\ Dispatch\ Previous\ day}{Regional\ Dispatch\ Likeday}$$

   In the above hierarchy, a like-day is the same day from the most recent *billing period* for which data from a preliminary billing run is available.

3.2.4. Hierarchy of Data for Estimating Wholesale Demand Response Settlement Quantity for *Demand Response Service Providers*

1. Actual *metering data*

   A billing run is to be performed each calendar day which will pick up the latest *metering data* available for all days for which there is yet to be a preliminary billing run.

   The *wholesale demand response settlement quantity* is calculated using the actual *metering data* in accordance with NER clause 3.15.6B-(c).

2. Final *substituted metering data*

   Substituted metering data is generated for each *NMI* by the MDP in accordance with the Metrology Procedure Part B: Metering Data Validation, Substitution and Estimation. Only *metering data* designated as final *substituted metering data* can be used.

   The *wholesale demand response settlement quantity* is calculated using the final *substituted metering data* in accordance with NER clause 3.15.6B-(c).

3. Estimated data

   The *wholesale demand response settlement quantity* is estimated at zero when actual *metering data* or final *substitution metering data* are not available.