

MSATS PROCEDURE: MDM PROCEDURES

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Version Control

VERSION	DATE	DETAILS
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3.1	20 th August 2009	Minor updates to reflect the change in governance from NEMMCO to AEMO. No content change
3.2	6 th December 2010	Minor Changes to the "Processing Overview" section 3.3.4 to reflect the changes in MDM process to store and use previous substituted calculated data. Addition of the Data Collection Type Code to Section 6.

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1 INTRODUCTION

1.1 Context for the MDM Procedures

The MDM Procedures are designed for use with the Market Settlements and Transfer Solution (MSATS).

MSATS is a system (the MSATS system) that is operated by AEMO to fulfil its obligations under the National Electricity Rules.

The Metering Data Management System (“MDM”) forms a part of MSATS:

MDM is a market wide solution for:

1. Management and definition of profiling areas;
2. The creation of profile shapes (Profile Preparation Service);
3. The application of profile shapes to basic metering data (Basic Meter Profiler)
4. The aggregation of energy data in preparation for delivery to AEMO’s settlement system

In the MDM Procedures:

1. Words and phrases that appear in italics are defined in the glossary in Section 11 of these procedures; and
2. Words and phrases which are defined in the National Electricity Rules have the same meaning under the MDM Procedures.

1.2 Purpose and Application of MDM Procedures

1.2.1 Purpose

The MDM Procedures define and document the management of metering data within MSATS in order to:

- (a) Facilitate the implementation of NEM metrology procedure into AEMO’s operational procedures;
- (b) Facilitate market settlements;
- (c) Facilitate and support efficient industry processes for:
 1. Transfer of data for market purposes;
 2. Calculation and management of profiles;
 3. Conversion of basic meter readings to half hourly data for market settlement; and
 4. Provision of data for Participants’ reconciliation.

Note that as a number of the NMI standing data items in MSATS affects the profile calculation and settlement aggregation processes in MDM, it is crucial that the standing data components in MSATS are correct. Examples of these standing items are TNI Code, DLF Code, NMI Classification Code, Aggregate flag, and Profile Name.

1.2.2 Application

- (a) The MDM Procedures apply to *MSATS Participants*.
- (b) The MDM Procedures apply to Registered *Participants* in accordance with the Rules.
- (c) The MDM Procedures apply to *Service Providers* through the AEMO accreditation process that has been established in accordance with the Rules.

1.2.3 Regulatory framework

- (a) The MDM Procedures are subordinate to the National Electricity Rules.
- (b) The MDM Procedures have been prepared in accordance with the requirements of the National Electricity Rules and NEM metrology procedure.

A *MSATS Participant* may be bound by relevant national and jurisdictional provisions.

1.3 Amendment to these procedures

- (a) The MDM Procedures may be amended in accordance with rules consultation procedures.
- (b) Prior to introducing changes to the MDM Procedures, AEMO shall facilitate a consultative process with Participants and Service Providers.
- (c) Changes to these procedures cannot be retrospective.
- (d) Approved changes to the MDM Procedures will take effect at 00:00 hours Eastern Standard Time on the day of effect with due notice being given to Market Participants.

1.4 Access to data

- (a) A *MSATS Participant* has a right to access data stored in *MDM* only as permitted and authorised by the NER.

1.5 Dispute resolution

- (a) Disputes which arise between Registered *Participants* must be resolved in accordance with the dispute resolution regime provided under the National Electricity Rules.
- (b) Disputes that arise between *Service Providers* and/or other MSATS participants must be resolved in accordance with the dispute resolution regime contained in accreditation agreements established between these parties and AEMO.

1.6 Enforceability of the Procedures

- (a) The MDM Procedures will be enforceable in accordance with clauses 7.2.8(c), 7.2.8 (d) and 7.2.8 (e) of the National Electricity Rules.

1.7 Counting of days

- (a) Unless otherwise stated, any measure of days identified in these Procedures is given in calendar days.

1.8 Related Documents

The MDM Procedures has been prepared with reference to the following documents:

- (a) National Electricity Rules and NEM metrology procedure
- (b) NMI Procedure (AEMO document number ME_GN059v00x)
- (c) Participant User Reference Guide to MSATS
- (d) The MSATS Procedures: CATS Procedures Principles and Obligations (MT_RT1700v00x)
- (e) The MSATS Procedures: Procedures for the Management of Wholesale, Interconnector, Generator and Sample (WIGS) NMIs (MT_RT1852v00x)
- (f) Service Level Requirements - Metering Data Collection, Processing and Delivery Services for Metering Provider, Category Type 5D, 6D and 7D
- (g) Service Level Requirements - Metering Data Collection, Processing and Delivery Services for Metering Data Agents, Category Installation Types 1-4.

1.9 Metering Data Management functions carried out in WIGS

A number of metering data management functions are performed in the WIGS section of MSATS. Where these functions are reliant on the Change Request process in a similar way to the normal Participant interface to CATS, they are documented in the WIGS Procedures.

Examples of these functions are the following Change Reason Codes –

2100 – Create External Profile Shape

This is the situation where AEMO is required to provide the MSATS system with a name and a provider (MDP) of an external profile shape. The date at which the information will apply would be a prospective date.

5110 – Change External Profile Shape

This change reason code would be used where AEMO is required to change the MDP of an external profile shape which had been recorded in the MSATS system. The date at which the information will apply would be a prospective date.

2 OBLIGATIONS

2.1 Application

- (a) The purpose of this clause is to specify general obligations imposed on each role that is registered in the MSATS system in relation to MDM activities.
- (b) This clause applies to the following roles:
 - Metering Data Provider (MDP);
 - AEMO.

2.2 General Obligations

- (a) Data access - A *MSATS participant* other than AEMO must not seek access through the MSATS system to the data pertaining to a NMI unless that person has, or had, a known and commercial relationship with the NMI.
- (b) Use of facility - A *MSATS participant* (other than AEMO) must not use a facility provided in the MSATS system for a purpose other than allowed by these procedures.
- (c) Timeliness - *MSATS participants* must follow best endeavours to comply with their obligations contained in the MDM Procedures to ensure that the transfer of data for settlement purposes is achieved within AEMO's published settlement timeframes – refer to the relevant Service Level Requirements (“SLR”) for further details.

2.3 MDP

The new MDP and current MDP are subject to the provisions of the Service Level Requirements.

The current MDP must:

- (a) Retain all metering data as specified by the National Electricity Rules.
- (b) Forward metering data including substitutes and estimates to all MSATS participants in accordance with the SLR and the NEM metrology procedure.

2.4 AEMO

AEMO must:

- (a) Maintain the TNI records in the MSATS system including the assignment of each TNI to a Profile area in MDM
- (b) Input and update in MDM as appropriate, the marginal loss factors (MLFs) associated with the TNI Codes
- (c) Register new profiles as defined by NEM metrology procedure and their sample meters if applicable
- (d) Perform the profile calculation, profile application, and settlement aggregation process within MDM to provide settlement data to AEMO's settlement system in accordance with the market settlement timetable

3 MDM FUNCTIONALITY

3.1 Introduction

MDM comprises two broad areas of functionality – setup functionality and processing functionality. This chapter outlines the basic features of this functionality.

The setup functions are performed initially, whilst commissioning the MDM system, or periodically at random intervals. The processing functionality is performed regularly as work that is preliminary to each Settlement run.

3.2 Setup Functionality

3.2.1 Profile Areas

AEMO defines a Profile Area in MDM. The Profile Area is defined by a list of TNIs that are assigned to the Profile Area.

The profile area defines the area where a profile name is applicable.

A Profile Area will at all times have at least one TNI associated with it.

Every TNI must be assigned to a profile area. If the NEM metrology procedure permits type 6 metering installations, the TNIs must be assigned to profile areas in accordance with the metrology procedure. In jurisdictions where a metrology procedure is not active for type 6 metering installations, the allocation of TNIs to profile areas may be arbitrary.

A Profile Area can only be assigned to one MDM Jurisdiction.

Initially, Profile Areas are based loosely on DNSP boundaries.

3.2.2 Characteristics of Profiles

A profile can be broadly classified into two different types:

- (a) NSLP; and
- (b) Non-NSLP.

The only type of profiles that are currently used in MSATS is the NSLP, and the Controlled Load Profiles in NSW, QLD and SA. Each non-NSLP profile (e.g. controlled load profile) is assigned a unique name. At present the only non-NSLP profiles that have been created are the controlled load profiles in NSW, QLD and SA.

Note that a dummy profile name of NOPROF (for no profile) has been created for interval datastreams so that MSATS can enforce a requirement that all datastreams have a profile name assigned to them.

3.2.3 Characteristics of the NSLP Profile

The NSLP calculation process for **each profile area** can be summarised as follow:

- (a) Summate all of the energy of the defined system load data streams for that profile area after adjusting the energy by the Marginal Loss Factor (MLF – also sometimes referred to as Transmission Loss factor (TLF)) and the Distribution Loss Factor (DLF).
- (b) Subtract the energy of all of the non system load interval data streams for that profile area after adjusting the energy by the MLF and the DLF. Note this will include any embedded generator interval data streams and any basic meters or un-metered connection points that have been profiled externally to MSATS (these meters will have active interval data streams assigned to them in MSATS).
- (c) Subtract any non-interval (basic meter) data streams for that profile area that have non NSLP profile names which have been tagged as to be “peeled-off”. This requires the basic meter data streams’ accumulated energy to be converted to interval data streams by applying the non NSLP profile to the energy readings after adjusting the accumulated energy by the MLF and the DLF. This tagging is made when the non NSLP profile name is assigned to that profile area.

The NSLP profile uses a number of parameters to define how missing energy data is substituted by MDM

The following table provides a description of the various parameters that can be defined when the NSLP is being set up.

PARAMETER	DESCRIPTION
Season Type	Each profile is assigned a Season Type model that divides the year into groups of time. In MDM a single season is used.
Day Type	Each profile is assigned a Day type model that divides a week into groups of time. In MDM a seven day type is used.
Date Exceptions	Date Exceptions are a set of days when the normal day types will not apply i.e. list of national public holidays. For example, for a holiday that falls on a weekday the system can be configured to use the value from a weekend instead of the normal weekday profile. The exceptions and the day type to be applied on respective exceptions are configured in the database.

3.2.4 Characteristics of Non NSLP Profiles

A non NSLP profile is defined by the relationship between a number of attributes. These attributes are:

- (a) A **data source** that defines the interval data streams to be used for calculation of the profile shape. This includes the period during which the profile is valid.
- (b) A **method** that defines how a data source is substituted where no interval data exists.
- (c) A **name** that identifies the profile by linking the above attributes.

The following table provides a description of the various parameters that are defined when a profile method is being set up.

PARAMETER	DESCRIPTION
Season Type	Each profile is assigned a Season type model that divides the year into groups of time. In MDM a single season is used.
Day Type	Each profile is assigned a Day type model that divides a week into groups of time. In MDM a seven day type is used.
Date Exceptions	Date Exceptions are a set of days when the normal day types will not apply i.e. list of national public holidays. For example, for a holiday that falls on a weekday the system can be configured to use the value from a weekend instead of the normal weekday profile. The exceptions and the day type to be applied on respective exceptions are configured in the database.

3.2.5 Settlement Data Scenarios

There are 4 basic Types of **Settlement Data Scenarios** that are processed in MDM and the results are provided to AEMO’s Market Management System (MMS) from which the market settlement statements are calculated and posted. These are:

- (a) Preliminary (Posted from MMS in trading week + 5 business days)
- (b) Final (Posted from MMS in trading week plus 18 business days)
- (c) Routine Revision 1 (Posted from MMS in trading week + approximately 20 weeks) – denoted R20
- (d) Routine Revision 2 (Posted from MMS in trading week + approximately 30 weeks) – denoted R30.

In addition, Special Settlement Scenarios can be run when AEMO Settlements determine that a *special revised statement* is required to be calculated (e.g. as per Clause 3.15.19 of the National Electricity Rules). These special runs will have parameters set for the objective of the run. For example, if at 24 weeks after the settlement week, it was determined that data used in the R20 run was incorrect a new scenario for that trading week could be run with data available at week 24.

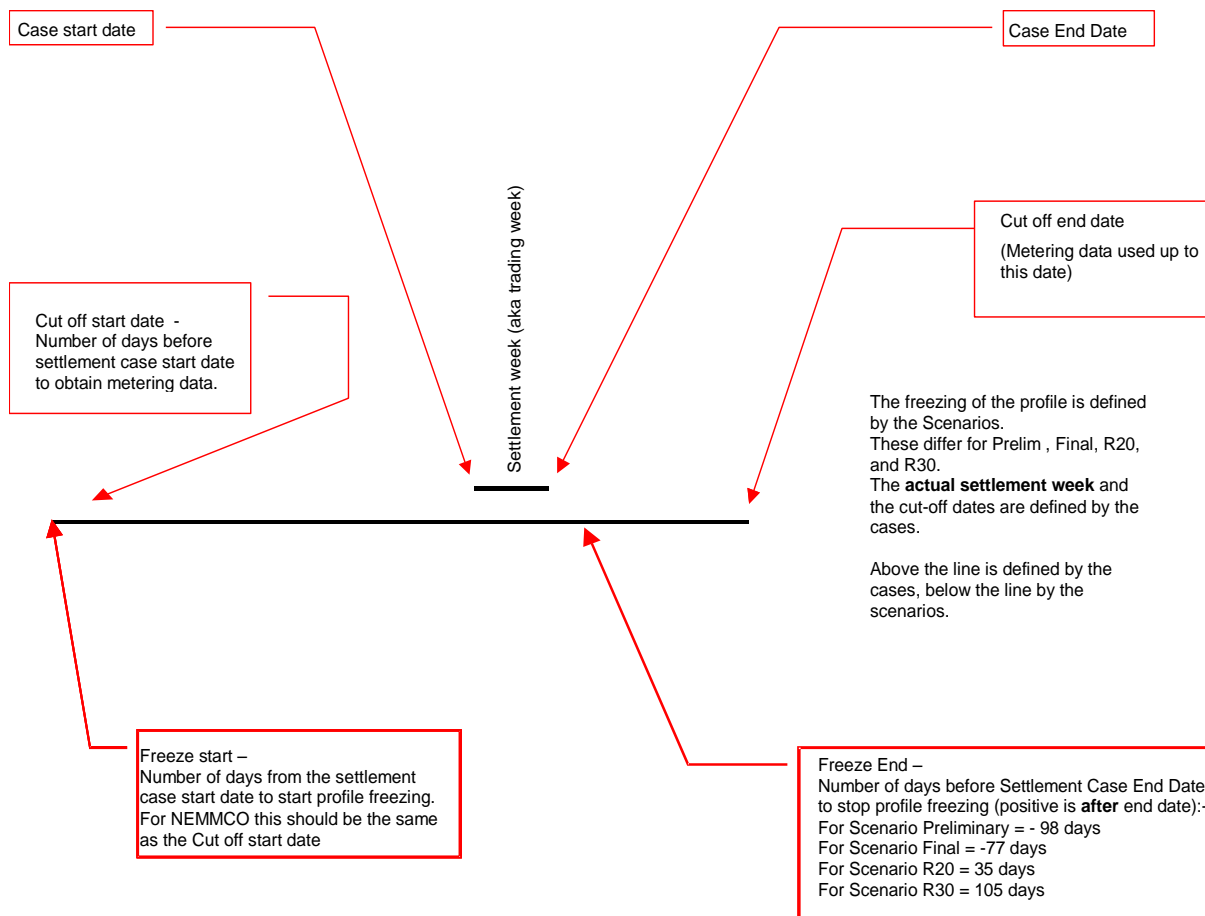
A scenario defines the basic parameters for that settlement type such as the length of time either side of the settlement period to freeze the profile.

The input parameters of a scenario include:

- (a) Scenario Name
- (b) Scenario Type (as above)
- (c) Profile freeze cut off period. This defines the period for which the system will freeze the Net System Load Profile (NSLP) (currently set to 15 weeks).

The relationship between the date ranges used in creating the Settlement Data Scenario can be seen in the following diagram.

Example – R20 settlement



SCENARIO/PARAMETER	PRELIMINARY	FINAL	R20	R30
SCENARIO TYPE	PRELIM. RUN	FINAL RUN	ROUTINE REVISION 1	ROUTINE REVISION 2
Number of days before the Case End date to start freezing NSLP	393	379	267	197
Number of days before the Case End date to stop freezing NSLP	112	91	-21	-91
NSLP Calculation	Y	Y	Y	Y
Use Frozen NSLP Profile	Y	Y	Y	Y
Cut Off Start (number of days prior to Case Start Date to get metering data)	386	372	260	197
Cut Off End (number of days after Case End Date to get metering data)	0	14	126	189

A Settlement Data Scenario is like a folder that contains different Settlement Cases for a particular Settlement Type.

The input parameters of each Settlement Case include:

- (a) 'Data As of Now' or
- (b) 'Data As Of Date/time' (data run based on data that existed at a defined point in time). This is not normally defined as generally the settlement case run will use the latest data available at the time that the case starts processing.
- (c) Process cut off start/end date periods. This defines the boundaries of the oldest data date and the latest cut off date for metering data used in the processing.
- (d) Case start/end date (this is the settlement date range – normally one week).
- (e) Scheduled (whether run is to be run now or if it is to be scheduled). The Settlement Case begins to run automatically when the scheduled time is reached.

3.2.6 MDM Settlement Data Processing

Settlement Data Processing consists of profile calculation (Profile Preparation Service for non NSLP and NSLP), profile application (Basic Meter Profiling for non NSLP and NSLP) and settlement energy (load) aggregation.

For the purposes of Settlement Data Processing, data streams can be categorised into four types. Different processes are applied to the respective types at different times during Settlement data Processing. These are:

- (a) Interval data streams. These are all used in the NSLP calculation (i.e. all first and second tier consumer data interval streams).
- (b) Non-Interval data streams that have a non NSLP profile name assigned and are peeled off during the NSLP calculations. These are used in the NSLP calculation.
- (c) Non-Interval data streams that have a NSLP profile type. These are only used in the settlement load aggregation process.
- (d) Non-Interval data streams that have a non NSLP profile name assigned and are not peeled off during NSLP calculations. These are only used in the settlement load aggregation process.

3.3 Processing Functionality

The purpose of this clause is to provide an overview of the functionality and operation of the MDM Settlement Data Processing. This consists of a number of basic functional blocks that can broadly be described as a Profile Preparation Service, Basic Meter Profiling, and Load Aggregation.

3.3.1 Profile Preparation Service (PPS)

Create Profile Shape



A profile shape is used to derive trading-interval level consumption of energy from an accumulation meter reading. The purpose of PPS is to prepare Net System Load Profiles (NSLP) with or without peel-off and to prepare non Net System Load Profiles.

The preparation of a profile shape is triggered when a settlement case begins to run. The process accepts a list of Profiles and Profile periods as inputs. For all input profiles, profile names are retrieved from the MDM database. For each profile name, profile data sources are identified and are validated against the CATS database (NMI standing data). After successful validation of the input data, PPS will invoke an appropriate algorithm (method) to calculate the profile shape data and store it in the MDM database. These generated profile shapes will be used to profile basic meter readings.

Profiles may also be generated externally and provided to MDM, for example, by an MDP.

3.3.2 Basic Meter Profiling (BMP)

Apply Profile Shape to Basic Meters



The purpose of BMP is to apply profile shape data to non interval data stream (basic meter) energy data to create half-hourly profiled interval energy data. This is required for all Tier 2 data streams and those Tier 1 data streams needed for NSLP Peel-off. The profile shape data may have been calculated by MDM or externally generated and delivered to MDM.

This process validates the existence of profile shape data for each profile name for the settlement period. If any data is missing, substituted values are calculated for the missing periods.

After the successful validation of profile shape data, all non interval data streams associated with the profile name are selected and validated for the existence of cumulative energy data for the settlement period. Any periods that are missing cumulative energy data are substituted by MDM. The cumulative energy data and the relevant profile shape data is used to generate half-hourly interval data for market settlement purposes.

3.3.3 Settlement Load Aggregation

Aggregate Metering Data for Settlement Purposes

The purpose of the Settlement Load aggregation process is to take metering energy data from wholesale and second tier customer interval data streams, and second tier customer interval energy data produced from the Basic Meter Profiling (BMP) process and to aggregate them by FRMP, Local Retailer, MDP, TNI, and data stream type. Note that DLFs are applied in this process.

This aggregated data is then further aggregated by FRMP, Local Retailer, and TNI and then loaded into AEMO's Settlement system. Non aggregated generation data is also loaded into AEMO's Settlements system.

3.3.4 Processing Overview

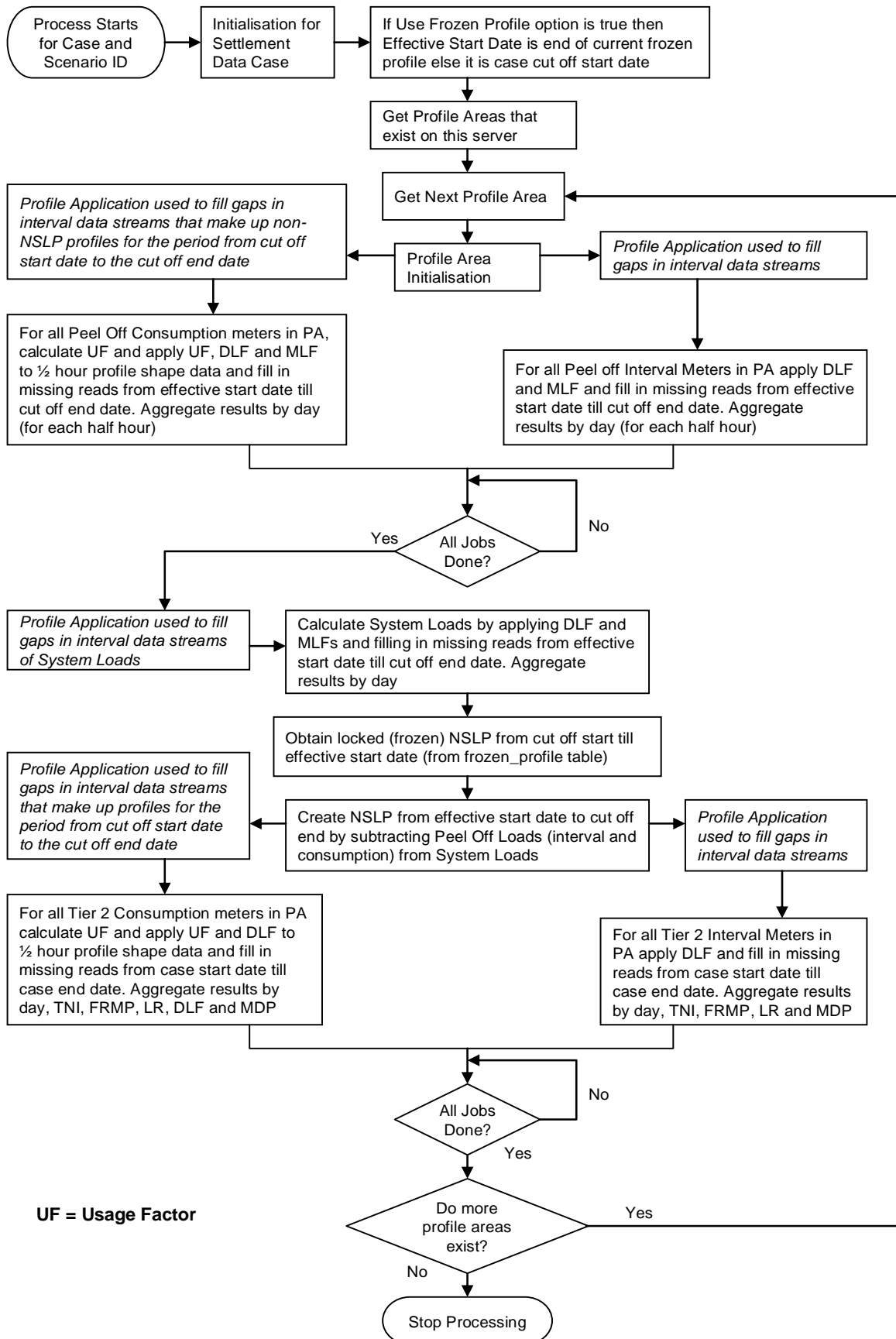
The Settlement Data Processing task is initiated by establishing and scheduling a Settlement Data Case. An outline of the process is as follows:

1. When the scheduled start time of the Case is reached the process commences by initialising all tables it requires.
2. The system initialises the NSLP process to determine the NSLP shape for the Profile Areas.
Steps 3 to 8 below outline how the NSLP calculation is performed.
3. The first step of calculating the NSLP is to create the profile shapes for the non NSLP profiles that are to be peeled off during the NSLP calculation. This process works out what profiles need to be created and for what period they are needed. The system uses data sources to create the profile shape (these are defined as part of the setup of the profile as detailed in Clause 3.2.4). For each half-hour it looks to see if a corresponding value exists within the data source. If any metering data does not exist in the system, MDM will calculate a substitute for the data source.
4. The next step of calculating the NSLP is to calculate the Usage Factors for the non-interval data streams that are to be included in the NSLP peel off calculation (i.e. with a profile name that is not NSLP). Usage Factors are calculated by dividing the data stream's cumulative energy by the sum of the interval values for the profile shape over that cumulative energy's start and end date range. If cumulative energy is not available for the calculation period, MDM will calculate a substitute. The cumulative energy value could be supplied by the MDP as either an actual or forward estimate read. It is at this point that the DLF is applied.
5. The system will then check active interval data streams for missing data from MDP's. Where a previous MDM stored substitute exists, this will be used. Where no previous MDM stored substitute exists and the interval data streams' energy data is not available

or profile shape interval data is not supplied, the system will use a proxy day profiling methodology to substitute the energy for profiling and Settlement purposes. The proxy day will select values from the most recent day of the same day type and season type as the day being modelled. If no historic data is available the system will use ADL divided by 48 for each interval. The system will then store the substituted energy values in the table as an MDM substitute for use in future settlement runs (Case ID).

6. After missing data has been substituted by MDM, the system will work out the interval consumption load for each non interval data stream. This is done by applying the Usage Factor created in step 4 for each data stream to the profile shape data value for the same period which has been created in step 3.
7. The system will then aggregate the data to derive the NSLP shape for each profile area. The NSLP shape will be calculated from the earliest non locked down profile period to the cut off end date as defined in the Case. Once derived, the NSLP shape is stored in the MDM database.
8. After the NSLP shape has been calculated the settlement load aggregation process will be undertaken. This follows a similar process to the NSLP process and commences with substituting load for second tier non interval data streams.
9. The next step in the final aggregation is to calculate usage factors for all non-interval second tier data streams that were not included in the NSLP calculation. How usage factors are calculated is discussed further in Step 4. In addition, the DLF will be applied at this step.
10. Next, the system will calculate the basic meter interval load for each non-interval data stream by applying usage factors to the profile shape values that corresponds to that data stream's assigned profile name
11. Finally, the system will aggregate data for all wholesale and second tier data streams. These may be interval or non-interval data streams. The output from the load aggregation run is stored in MDM using load aggregation scenario and case as a unique identifier. It stores data for customer load and interconnectors aggregated at TNI, FRMP, LR, MDP and data stream type level. It will also collect non aggregated data for registered generators.
12. The output from the final step will be placed in interface files for loading into AEMO's Settlement System.
13. The normal weekly process will consist of 4 settlement runs. Additional runs may be performed on an ad-hoc basis.

Process Flow Diagram for a Settlement Data Case



4 MAINTENANCE OF TNI AND PROFILE AREA

4.1 Introduction

This section outlines the information that is required by MSATS to create and maintain Profile Areas. This function can only be performed by AEMO.

The creation and maintenance of a TNI is performed in the CATS section of MSATS. The creation of a Profile Area and maintenance of Profile Area attributes is performed in the MDM section of MSATS.

4.2 Create a Profile Area

Conditions precedents are:

- (a) A valid Jurisdiction Code has been entered into the CATS and MDM database.
- (b) A valid TNI code has been entered into the CATS database.

The AEMO system operator must provide the following information:

- (a) A Profile Area name.
- (b) The Start Date for which the Profile Area is to be valid.
- (c) The End Date for which the Profile Area is to be valid (normally 31/12/9999).
- (d) The TNIs that will be assigned to the profile Area.

The AEMO system operator may:

- (a) Edit the dates for which a TNI will be applicable for a Profile Area (by default all TNI dates are set to the Start and End dates for the Profile Area).

4.3 Maintain Profile Area Attributes

Conditions precedent are:

- (a) The Profile Area currently exists. (Will be viewable from the “Profile Area – List” screen under Profile Preparation section of browser).

The AEMO system operator must provide some of the following information:

- (a) The revised End Date for which the Profile Area is to be valid, or
- (b) The revised list of TNIs that will be associated with the profile Area.

5 LOAD DATA – NON-INTERVAL NMI DATASTREAM

5.1 Application

This procedure is used for loading data into MSATS via batch interface for a non-interval NMI datastream. The timeframe for delivery of metering data to MSATS is detailed in the relevant Service Level Requirements documents and the MDP Data Delivery Calendar.

5.2 Conditions Precedent

- (a) A non interval NMI datastream already exists in CATS with active status. If the datastream does not exist it must first be defined in CATS (refer CATS Procedures) before this procedure can be implemented.
- (b) Any submitted data that has a Version Datetime equal to or earlier than any data that already exists in MDM will be rejected.

5.3 MDP Obligations

The MDP must:

- (a) Where there is one or more existing energy data records for the datastream, ensure that the start date of the data being loaded aligns with the end date of the existing record (start date equals previous record end date plus one).
- (b) Submit an aseXML message containing the metering data csv payload for the specific NMI datastream and settlement date. The message will include nomination of:
 - The date of submittal of the data
 - NMI
 - Datastream suffix
 - The data From Date
 - The data To Date
 - MDP
 - MDP Version datetime
 - Energy Value in kWh units
 - Status flag
- (c) Acknowledge first and second level validations in MSATS by responding as per the aseXML Guidelines document.

6 LOAD DATA – INTERVAL NMI DATASTREAM

6.1 Application

This procedure is used for loading data into MSATS via batch interface for an interval NMI datastream. The timeframe for delivery of metering data to MSATS is detailed in the relevant Service Level Requirements documents and the MDP Data Delivery Calendar.

6.2 Conditions Precedent

- (a) An interval NMI datastream already exists in CATS with active status. If the datastream does not exist it must first be defined in CATS (refer CATS Procedures) before this procedure can be implemented.
- (b) Any submitted data that has a Version Datetime equal to or earlier than any data that already exists in MDM will be rejected.

6.3 MDP Obligations

The MDP must:

- (a) Submit an aseXML message containing the metering data csv payload for the specific NMI datastream and settlement date. The message will include nomination of:
 - The date of submittal of the data
 - NMI
 - Datastream suffix
 - Settlement Date
 - MDP
 - MDP Version datetime
 - Energy Values in kWh units
 - Status flag for each interval of the data
 - DCTC
- (b) Acknowledge first and second level validations in MSATS

6.4 Load Sample Meter Data for Defined NMI Datastreams

The Procedure for loading sample meter data is similar to “Load Data – Interval NMI Datastream”. The only difference is that the data stream type defined in CATS is “P”, and the aseXML csv payload tag in the MDM data load file for NMI data stream types “P” is <csvProfileData>.

6.5 Load Externally Calculated Profile Shape

The Procedure for loading external profile shape data is similar to “Load Data – Interval NMI Datastream”. The only difference is that the data stream type defined in CATS is “P”, and the aseXML csv payload tag in the MDM data load file for NMI data stream types “P” is <csvProfileData>.

7 DEFINE PROFILE

7.1 Application

This procedure is used for defining the data source(s), methodology and name for the identification of a new non NSLP Profile. The new profile is defined in MDM by using the interactive interface. This function can only be performed by AEMO.

7.2 Define the Data Source

Conditions precedent are:

- (a) The list of NMI Data Stream data sources are active in CATS. If the appropriate data source NMI data streams do not exist they must first be defined in CATS (refer CATS Procedures) before this procedure can be implemented.

The AEMO system operator must provide the following information:

- (a) Data source name
- (b) Sampling period start date that is not earlier than the current system date.
- (c) Sampling period end date that is not earlier than the start date (normally set to 31/12/9999).
- (d) At least one NMI and suffix that identifies data to be used for calculation of the profile shape.
- (e) Weight for each NMI and associated suffix, as a numeric value between 0.00 and 1.00.

7.3 Define the Profile Method

MDM has been set up to use only one profile methodology. This is the seven day type methodology.

7.4 Define the Profile Name

Conditions precedent are:

- (a) The jurisdiction has approved the creation of the proposed profile.
- (b) The data source/s and profile method have been defined.

The AEMO system operator must provide the following information:

- (a) A unique profile name
- (b) Start date
- (c) Profile Method Name
- (d) Data Source Name
- (e) Applicable Profile Areas

The AEMO system operator may provide the following information:

- (a) End Date that is not earlier than the start date. The screen will default the end date to the high date (31-Dec-9999).

8 PROFILE CALCULATION

8.1 Application

This procedure is used for defining a Settlement Data Scenario, defining a Settlement Data Case, and submitting the case to run. Transactions are submitted to MSATS by using the interactive interface. This function can only be performed by AEMO.

8.2 Settlement Data Scenario

The purpose of this section is to define the parameters that are required to create settlement data. This involves the creation of Settlement Data Scenarios that identify the relationship between key parameters.

Conditions precedent are:

- (a) Scenario type has been defined

The AEMO user who is creating a new Settlement Data Scenario must provide the following information:

- (a) The Settlement Data Scenario Name. This must be unique.
- (b) The Settlement Data Scenario Type.
- (c) The number of calendar days before the Case End Date to start freezing the NSLP.
- (d) The number of calendar days before the Case End Date to stop freezing the NSLP.
- (e) Whether the NSLP is to be calculated in this Settlement data Scenario.

A Settlement Data Scenario may be edited by the AEMO user who created the Scenario, by the system administrator or by AEMO super users.

Conditions precedent are:

- (a) A Settlement Data Scenario has been selected
- (b) No cases/runs have been processed under this scenario

To edit the Settlement Data Scenario the following information must be provided:

- (a) The Settlement Data Scenario Type
- (b) The number of calendar days before the Case End Date to start freezing the NSLP
- (c) The number of calendar days before the Case End Date to stop freezing the NSLP
- (d) Whether the NSLP is to be calculated in this Settlement Data Scenario

A Settlement Data Scenario may be deleted by the AEMO user who created the Scenario, by the system administrator or by AEMO super users.

Conditions precedent are:

- (a) A Settlement Data Scenario has been selected
- (b) No cases/runs have been processed under this scenario

8.3 Settlement Data Cases

The purpose of this section is to define the parameters that are required to establish a Settlement Data Case.

Conditions precedent are:

- (a) Scenario to be used has been defined

The AEMO user who is creating a new Settlement Data Case must provide the following information:

- (a) The Settlement Data Scenario under which the Case should be run.

An AEMO user may edit a Settlement Data Case by providing the same information as required for when a Settlement Data Case is created as long as the Case is uncommitted (not scheduled). Once the Case has been committed, an edit is not possible.

9 REPORTS

9.1 Introduction

This section describes the reports from MDM that are available to Participants. More information can be found in the “Participant User Reference Guide to MSATS” document.

The reports described in this section are:

- MDM RM9 Actual Versus Estimate Data Report
- MDM RM11 Missing Data Report
- MDM RM13 NMI Data Streams History Report
- MDM RM14 MDP Data version Comparison Report
- MDM RM15 Count of Multiple Versions Report
- MDM RM16 Level 1 Settlement Reconciliation Report
- MDM RM17 Level 3 Settlement Reconciliation Report for Non-Aggregated Data
- MDM RM18 Interval Data Report
- MDM RM20 PPS Report
- MDM RM21 Level 2 Settlement Reconciliation Report
- MDM RM22 Data Estimation Report
- MDM RM26 MDP Substitution and Estimation Report
- MDM RM27 Level 2 Settlement Reconciliation Report (Automatically produced with settlement case approval)

9.2 Report Outlines

Report Name:

- MDM RM9 Actual Versus Estimate Data Report

Purpose:

The purpose of the Actual versus Estimate Data report is to allow AEMO and Participants to compare the number of Estimated and Actual meter reads in the system. The output is for either consumption or interval meters and can be further restricted to only those meter reads supplied by a particular MDP.

Parties that have access to the report:

- AEMO, FRMP, LR, MDP.

Information that must be submitted with the report request:

- Start date and End date
- Data type, whether interval or consumption (non-interval)
- The ‘As at’ date and time for the data being requested
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- The MDP. This limits the report to records related to this MDP.

Report Outputs:

- MDP
- Settlement Date
- Count of number of non actual reads
- Count of total number of reads
- Percent (%) of non actual reads
- Report sequence number

Report Name:

- MDM RM11 Missing Data Report

Purpose:

The purpose of the Missing Data report is to allow AEMO and Participants to find out what metering data is missing from MDM.

Parties that have access to the report:

- AEMO, FRMP, LR, MDP.

Information that must be submitted with the report request:

- Start date and End date
- NMI (Optional)
- MDP
- The 'As at' date and time for the report being requested (only used if NMI is specified)
- The last sequence number. This specifies the starting point of the report.
- Data type, whether interval or consumption (non-interval)
- NMI selection, whether all NMIs or second tier NMIs only

Report Outputs:

- MDP
- Settlement Date
- NMI
- Suffix
- Report sequence number

Report Name:

- MDM RM13 NMI Data Streams History Report

Purpose:

The purpose of the NMI Data Streams History report is to allow AEMO and Participants to retrieve the history of a NMI data stream's metering data for a specified period. This report will return all versions of metering data that exist in the system for that NMI for days within the report period.

Parties that have access to the report:

- AEMO, RP, FRMP, LR, LNSP, NSP2, MPB, MPC, MDP.

Information that must be submitted with the report request:

- Start date and End date
- Data type, whether interval or consumption (non-interval)
- NMI
- The 'As at' date for the data being requested
- The last sequence number. This specifies the starting point of the report.

Report Outputs:

- Settlement Date (for Interval meters) or Start Date and End Date (for Consumption meters)
- NMI
- Suffix
- Load Time
- MDP Version Date
- MDP
- Value(s)
- Read type flag(s)
- Report sequence number

Report Name:

- MDM RM14 MDP Data Version Comparison Report

Purpose:

This report allows the comparison of meter reads loaded on 2 separate date times for a single NMI. This report will return all data loaded for suffixes of a particular NMI on each of the 2 load date times (supplied as inputs) If 'only report on differences' was supplied as an input parameter only reads that are different between the 2 dates will be returned. Otherwise all meter reads loaded on the 2 load date times for suffixes of the input NMI will be returned.

Parties that have access to the report:

- AEMO, RP, FRMP, LR, LNSP, NSP2, MPB, MPC, MDP.

Information that must be submitted with the report request:

- Start date and End date
- NMI
- Date time load 1
- Date time load 2
- Data Type (interval or consumption (non-interval))
- Report where difference is not zero (Y/N)
- As at date time
- The last sequence number. This specifies the starting point of the report.

Report Outputs:

This output is depending on whether the report only on differences parameter was true.

(A) Interval Data

(1) Report Only Differences

A difference exists when any of the read type flags are different or any of the values are different between 2 reads.

- Only 1 record returned – Return no data in the output
- 2 records exist with no differences exist – Return no data in the output
- Difference exist – Return
 - NMI
 - Suffix
 - Settlement Date
 - MDP
 - MDP Version Date for Load Time 1
 - Load Time 1
 - Values 1..48 for load time 1
 - Read Type Flags for load time 1
 - MDP Version Date for Load Time 2
 - Load Time 2
 - Values 1..48 for load time 2
 - Read Type Flags for load time 2
 - Differences between values for load time 1 and load time 2
 - Differences between read type flags for load time 1 and load time 2 Any difference in the read type flags will be indicated by a '1' and a lack of difference will be indicated by a '0'.

(2) Not Report Only Differences

- 1 record returned – Return
 - NMI
 - Suffix
 - Settlement Date
 - MDP
 - MDP Version Date

- Load Time
- Values 1..48
- Read Type Flags
- 2 records returned – Return
 - NMI
 - Suffix
 - Settlement Date
 - MDP
 - MDP Version Date for Load Time 1
 - Load Time 1
 - Values 1..48 for load time 1
 - Read Type Flags for load time 1
 - MDP Version Date for Load Time 2
 - Load Time 2
 - Values 1..48 for load time 2
 - Read Type Flags for load time 2
 - Differences between values for load time 1 and load time 2
 - Differences between read type flags for load time 1 and load time 2 Any difference in the read type flags will be indicated by a '1' and a lack of difference will be indicated by a '0'.

(B) Non-Interval Data

(1) Report Only Differences

A difference exists when the read type flag or the values are different between the 2 reads.

- Only 1 record returned – Return no data in the output
- No differences exist – Return no data in the output
- Difference exist – Return
 - NMI
 - Suffix
 - Settlement Date
 - MDP
 - MDP Version Date for Load Time 1
 - Load Time 1
 - Value for load time 1
 - Read Type Flags for load time 1
 - MDP Version Date for Load Time 2
 - Load Time 2
 - Value for load time 2
 - Read Type Flag for load time 2
 - Difference between value for load time 1 and load time 2
 - Difference between read type flag for load time 1 and load time 2. A difference in the read type flag will be indicated by a '1' and a lack of difference will be indicated by a '0'.

(2) Not Report Only Differences

- 1 record returned – Return
 - NMI
 - Suffix
 - Settlement Date
 - MDP
 - MDP Version Date
 - Load Time
 - Value
 - Read Type Flag
- 2 records returned – Return

- NMI
- Suffix
- Settlement Date
- MDP
- MDP Version Date for Load Time 1
- Load Time 1
- Value for load time 1
- Read Type Flags for load time 1
- MDP Version Date for Load Time 2
- Load Time 2
- Value for load time 2
- Read Type Flag for load time 2
- Difference between value for load time 1 and load time 2
- Difference between read type flag for load time 1 and load time 2. A difference in the read type flag will be indicated by a '1' and a lack of difference will be indicated by a '0'.

Report Name:

- MDM RM15 Multiple Versions Report

Purpose:

The purpose of this report is to provide information on the number of versions of metering data that have been supplied to the system by an MDP. If the number of versions is supplied as an input the output will contain all NMIs and Suffixes with that number of versions or greater. If a number of versions is not supplied the output will return a count of all NMIs and Suffixes with by number of versions supplied. This report is available to AEMO and all active participants.

Parties that have access to the report:

- AEMO, RP, FRMP, LR, LNSP, NSP2, MPB, MPC, MDP.

Information that must be submitted with the report request:

- Start date and End date
- MDP
- Data Type (interval or consumption (non-interval))
- The 'As at' date and time
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- NMI
- Number of versions

Report Outputs:

There are three Output Formats for this report. The one that will be used depends on whether the user specified the no of versions in the input.

The report output when No of Versions is included for Interval data will have

- NMI and NMI Suffix
- Settlement Date
- Count of number of Versions
- Sequence number

The report output when No of Versions is included for Non-Interval data will have

- Start Date
- End Date
- NMI and NMI Suffix
- Count of number of Versions
- Sequence number

The report outputs when number of versions is not specified will have

- Settlement Date
- Count of number of Versions
- Count of number of NMI datastreams with that Number of Versions
- Sequence number

Report Name:

- MDM RM16 Level 1 Settlement Reconciliation Report

Purpose:

The Level 1 Settlement Reconciliation report provides aggregated interval data grouped by TNI, FRMP, LR, MDP, and datastream type that was used during a settlement run. Source data for this report includes data supplied by an MDP and that produced as an output of a settlement run and includes data from interval data streams and consumption data streams.

Parties that have access to the report:

- AEMO, FRMP, LR, and MDP.

Information that must be submitted with the report request:

- Settlement Case ID. Defines the required settlement run.
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- Start date and End date. If the Start date and End date is not provided, data will be provided covering the entire period defined by the Settlement Case ID.

Report Outputs:

- Settlement date
- Creation date/time
- TNI, FRMP, LR, MDP
- Datastream Type
- Data for Period 1 through to Period 48
- Report sequence number

Report Name:

- MDM RM17 Level 3 Settlement Reconciliation for Non-Aggregated Data

Purpose:

The Level 3 Settlement Reconciliation for Non-Aggregated Data report provides interval data for all suffixes of a particular NMI that was used during a settlement run. Source data for this report includes data supplied by an MDP and that produced as an output of a settlement run and includes data from interval data streams and consumption data streams.

Parties that have access to the report:

- AEMO, FRMP, LR, and MDP.

Information that must be submitted with the report request:

- NMI. This limits the output to suffixes of this NMI.
- Settlement Case ID. Defines the required settlement run.
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- Start date and End date. The default is the entire period defined by the Settlement Case.

Report Outputs:

- Settlement date
- NMI and suffix
- Creation date/time
- Data for Period 1 through to Period 48
- Read type flags
- Report sequence number

Report Name:

- MDM RM18 Electricity Interval Data Report

Purpose:

The purpose of this report is to allow AEMO and participants to retrieve all the meter data for a particular combination of TNI, FRMP, LR, and MDP. The output of the report will return the meter reads of all suffixes for NMIs of the combination. This report will only contain Interval data.

Parties that have access to the report:

- AEMO, RP, FRMP, LR, LNSP, NSP2, MPB, MPC, MDP.

Information that must be submitted with the report request:

- Start date and End date.
- TNI
- FRMP
- LR
- MDP
- The 'As at' date and time for the data being requested
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- NMI. This limits the output to suffixes of this NMI.
- MDP version. This limits the output to metering data that have the specified MDP version date time.

Report Outputs:

- MDP
- MDP version date
- NMI and suffix
- Settlement date
- Load date/time
- Data for Period 1 through to Period 48
- Read type flags
- Report sequence number

Report Name:

- MDM RM20 PPS Report

Purpose:

The purpose of the PPS Report is to allow AEMO and Participants to retrieve profile shape data. It will firstly return all NSLP profiles that cover the report period. It will then return the profile shape covering the report period which would be used for each profile area in a settlement run. The output can be limited to those profiles used in a case run or by profile name.

Parties that have access to the report:

- All participants

Information that must be submitted with the report request:

- Start date and End date, compulsory if Case ID is not supplied.
- The 'As at' date and time for the data being requested, if Case ID is not supplied.
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- Start date and End date, if Case ID is supplied.
- Settlement Case ID. Limits output to that case.
- Profile name. Limits output to that profile.

Report Outputs:

- Profile name
- Profile area
- Settlement date
- Load time/Creation time
- Data for Period 1 through to Period 48
- Report sequence number
- Locked
- Settlement Case

Report Name:

- MDM RM21 Level 2 Settlement Reconciliation Report
- MDM RM27 Level 2 Settlement Reconciliation Report (Automated on Settlement Case Approval)

Purpose:

For a settlement run this report will provide the daily totals of load data for each of a TNI's (supplied as an input) NMIs. The NMIs returned are restricted to those NMIs that have the same LR that was supplied as an input to this report. The output can also be further restricted to those NMIs with a certain MDP.

For the Automated RM27 report produced on Approval of a Settlement case, this report will provide the daily totals of load data for all NMI's for all TNI's combinations for all MDP's

Parties that have access to the report:

- AEMO
- A participant must be assigned roles of MDP, FRMP or LR to the NMIs.

Information that must be submitted with the report request for the RM21 report:

- Settlement Case ID
- TNI
- LR
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request for the RM21 report:

- Start date and End date
- MDP. Further limits the output to NMIs associated with the specified MDP.

Report Outputs:

- TNI
- LR
- MDP
- Settlement date
- NMI
- Daily total energy
- Report sequence number
- DataStream Type
- MSATS Substitution Indicator

Report Name:

- MDM RM22 Data Estimation Report

Purpose:

The purpose of the Data Estimation report is to allow AEMO and participants to obtain details of substitutions that have been made during a settlement run for missing Interval and Consumption Meter reads

Parties that have access to the report:

- AEMO
- A participant that has a MDP, FRMP or LR association with the substituted NMI datastream.

Information that must be submitted with the report request:

- Settlement Case ID
- The last sequence number. This specifies the starting point of the report.

Information that may be submitted with the report request:

- Start date and End date. The default is the entire period defined by the Settlement Case ID.

Report Outputs:

- Settlement Date
- NMI and Suffix
- Creation date time
- Substituted value for each interval
- Report sequence number

Report Name:

- MDM RM26 MDP Substitution and Estimation Report

Purpose:

The purpose of the Data Substitution and Estimation report is to allow AEMO and MDP's to obtain details of substitutions and/or estimations that are still current in MDM for a specified settlement week.

Parties that have access to the report:

- AEMO, MDP

Information that must be submitted with the report request:

- Start and End Dates
- Interval or Consumption

Report Outputs:

Interval

- NMI and Suffix
- Settlement Date
- FRMP
- LR
- MDP
- FLAG

Consumption

- NMI and Suffix
- Start and End Date
- FRMP
- LR
- MDP
- FLAG
- kWh

10 GLOSSARY

Terms which are defined in the National Electricity Rules are deemed to have the same meaning under these Procedures. See also CATS Procedures for further definitions of terms.

TERM	DESCRIPTION
Address	See structured address and unstructured address
AEMO	Australian Energy Market Operator as defined in the National Electricity Rules.
CATS	The Consumer Administration and Transfer Solution.
Change request	The transaction that may be submitted by a CATS participant whenever they want to create or update NMI Standing data, including the standing data associated with a consumer transfer.
Change request status	The name of nominated points in the life cycle of a change request. The status points can be: pending validation; requested; pending; completed; objected; cancelled.
Change reason code	A code which identifies the purpose of a specific change request transaction. This code controls what data can be supplied in the change request, which type of participant can initiate it, etc.
Registered Participant	As defined in the National Electricity Rules
Consumer	In these Procedures, means a party purchasing electricity from a retailer where that Party's electricity consumption is for its own use.
current FRMP	The retailer that is identified on the current NMI master record.
current LNSP	The LNSP that is identified on the current NMI master record.
current MDP	The MDP that is identified on the current NMI master record.
Current NSP2	The NSP2 that is identified on the current NMI master record
current Retailer	See 'current FRMP'
current RP	The RP that is identified on the current NMI master record.
Datastream	A stream of metering data associated with a connection point, as represented by a NMI. A NMI can have multiple datastreams (from multiple meters or from multiple channels or registers that comprise a single meter). Each datastream is identified by a suffix which is associated with the NMI to which it belongs.
DCTC	Data Collection Type Code
Distribution Network Service Provider	As defined in the National Electricity Rules
DLF code	Is a code to identify the value of the distribution loss factor as defined in the National Electricity Rules.
DNSP	See Distribution Network Service Provider
Embedded network	A privately owned electricity supply network within a site that usually has just one or two connections to the external network

MSATS PROCEDURES: MDM PROCEDURES

TERM	DESCRIPTION
	of the LNSP, such as in a large shopping centre or an airport.
EPROFILE	The NMI classification code which is used to define a virtual metering installation which makes use of an external profile shape as its metering data.
Financially Responsible Market Participant	As defined in the National Electricity Rules
FRMP	See Financially Responsible Market Participant
Interval meter	Is a meter that is capable of providing energy data for Trading Intervals (see National Electricity Rules).
Jurisdiction	A jurisdiction who is classified as a 'participating jurisdiction' in accordance with the national electricity law.
Jurisdictional code	As specified in clause 4.5 of these procedures.
LNSP	See Local Network Service Provider
Local Network Service Provider	As defined in the National Electricity Rules
Local Retailer	As defined in the National Electricity Rules
LR	See Local Retailer
MDM	The part of the MSATS system which is known as 'metering data management'.
MDM datastream	The term used to represent a NMI suffix, as distinct from a meter suffix. The NMI suffix is required by MDM to enable the metering data associated with a NMI to be correctly identified.
MDP	See Metering Data Provider
Metering Data Agent	Is a party accredited by AEMO, who has the single point of responsibility for the delivery of metering data for a <i>NMI</i> to affected Retailers, LNSPs and AEMO. See also Metering Data Provider.
Metering Data Provider (MDP)	The person responsible for the collection, processing and transfer of energy data from the meter or data logger to AEMO. The MDP consists of two accredited service provider groups: The Metering Data Agent, who is responsible for the type 1, type 2, type 3 and type 4 metering installations; and The Metering Provider Category D, who is responsible for the type 5, type 6 and type 7 metering installations.
Metering Provider (MP)	See National Electricity Rules. See also the NEM metrology procedures and the AEMO Metering Provider Accreditation Overview (document number ME_MA1683vxxx) for definitions of MPA, MPB, MPC and MPD.
MMS	AEMO's Market Management System which includes the Market Settlement System
MP	See Metering Provider
MPB	A special category of Metering Provider in accordance with NEM metrology procedure. This category is responsible for the installation and maintenance of a meter and associated equipment within the metering installation. See also Metering Provider.
MPC	A special category of Metering Provider in accordance with

MSATS PROCEDURES: MDM PROCEDURES

TERM	DESCRIPTION
	NEM metrology procedure. This category is responsible for the collection of metering data from the meter and the transfer of this metering data into a metering installation database. See also Metering Provider.
MSATS	The market settlements and transfer solution
MSATS participant	Any organisation that has a defined role in the MSATS system – see 'role'
MSATS system	The centralised computer system which is managed by AEMO for MSATS.
National Electricity Rules	The legal instrument formed under the National Electricity Law. The National Electricity Rules is available from AEMC.
Network tariff code	A nominated code which represents the network tariff charged by the LNSP for network services.
Next scheduled read date	The date of the next scheduled meter read to be undertaken by the <i>current MDP</i> .
NMI	National Metering Identifier as defined in the National Electricity Rules.
NMI checksum	A number, 1 digit in length, which is used to validate that a <i>NMI</i> supplied to the <i>MSATS system</i> is a valid <i>NMI</i> .
NMI classification	A code that identifies the nature of the flow of electricity at a connection point, eg. Generator, interconnector. Retail connection points are classified as small, medium or large, depending on the volume of energy consumed. Sample and Eprofile are used to classify loads used for profiling under certain conditions.
NMI datastream	See MDM datastream
NMI Procedure	See reference in clause 1.9 of these procedures.
NMI site address	Means the physical location of the connection point.
NSP2	Second Network Service Provider. For transmission connection points (Wholesale NMIs) that have two network service provider roles, the TNSP is assigned the LNSP role and the DNSP is assigned the NSP2 role
Profile name	Is the code that identifies the algorithmically derived shape of consumption that will be used to allocate trading intervals to Basic Meter readings.
Prospective days	The situation where the days under consideration proceed the current date.
Retailer	Is the person who is responsible in the wholesale market for the settlement of electricity that has been supplied to a consumer's NMI
Retrospective days	The situation where the days under consideration precede the current date.
Role	The 'role' in which an organisation is associated with a connection point in CATS. Note that a single company may be associated with a connection point in more than one role.

TERM	DESCRIPTION
Role status	<p>Current or new. This is an attribute of a role.</p> <p>The current party for a role (e.g. current LNSP) is the party which, in the MSATS system, is shown as performing in that role on the current master record for a NMI.</p> <p>The new party for a role is the nominated (or proposed) new party on a change request which is currently in progress.</p>
RP	See Responsible Person
SAMPLE	The NMI classification code which is used to define a metering installation that forms part of the sample of metering data for use in a non NSLP profile shape application.
Service Provider	Is a party who is accredited by AEMO to perform their role in accordance with the Rules but who is not a <i>Registered Participant</i> .
TNI	Is a four character code used to identify the transmission node (as defined in the National Electricity Rules)
TNSP	See Transmission Network Service Provider
Transmission Network Service Provider	As defined in the National Electricity Rules

Appendix A

10.1 MDM Data Load Transaction Process

Following is a summary of the transactions for each participant in a metering data exchange to MDM in order of operation.

ROLE	SCENARIO ACTIONS	VERIFICATION TASKS
MDP	MDP to submit aseXML message (within a zip file) containing the csv metering data payload for the specified NMI datastream and settlement date into their inbox	Confirm that acknowledgments have been received (.ack file written to outbox with same file name)
MSATS	Message receipt and transaction receipt .ack file created	.ack file written to MDP outbox with same file name as input zip file. If the zip file is submitted via the browser the acknowledgement response is received on the browser.
MDP	Delete .zip file from inbox	.zip file deleted from inbox
MSATS	Remove ack file from inbox	.ack file is deleted from outbox
MSATS	Second level validation .zip file produced	.zip file written to MDP outbox
MDP	MDP downloads copy of transaction receipt validation .zip file and acknowledges file	ack file written to MDP inbox with same file name as input zip file (if acknowledged via browser this step may be omitted)
MSATS	Delete .zip file from participant outbox	zip file is deleted from outbox
MDP	Remove ack file from inbox	ack file is deleted from inbox