MARKET PROCESS DESIGN

MPD 15 - Market Process for Data Processing for QH Meters

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1. Introduction

1.1 Scope

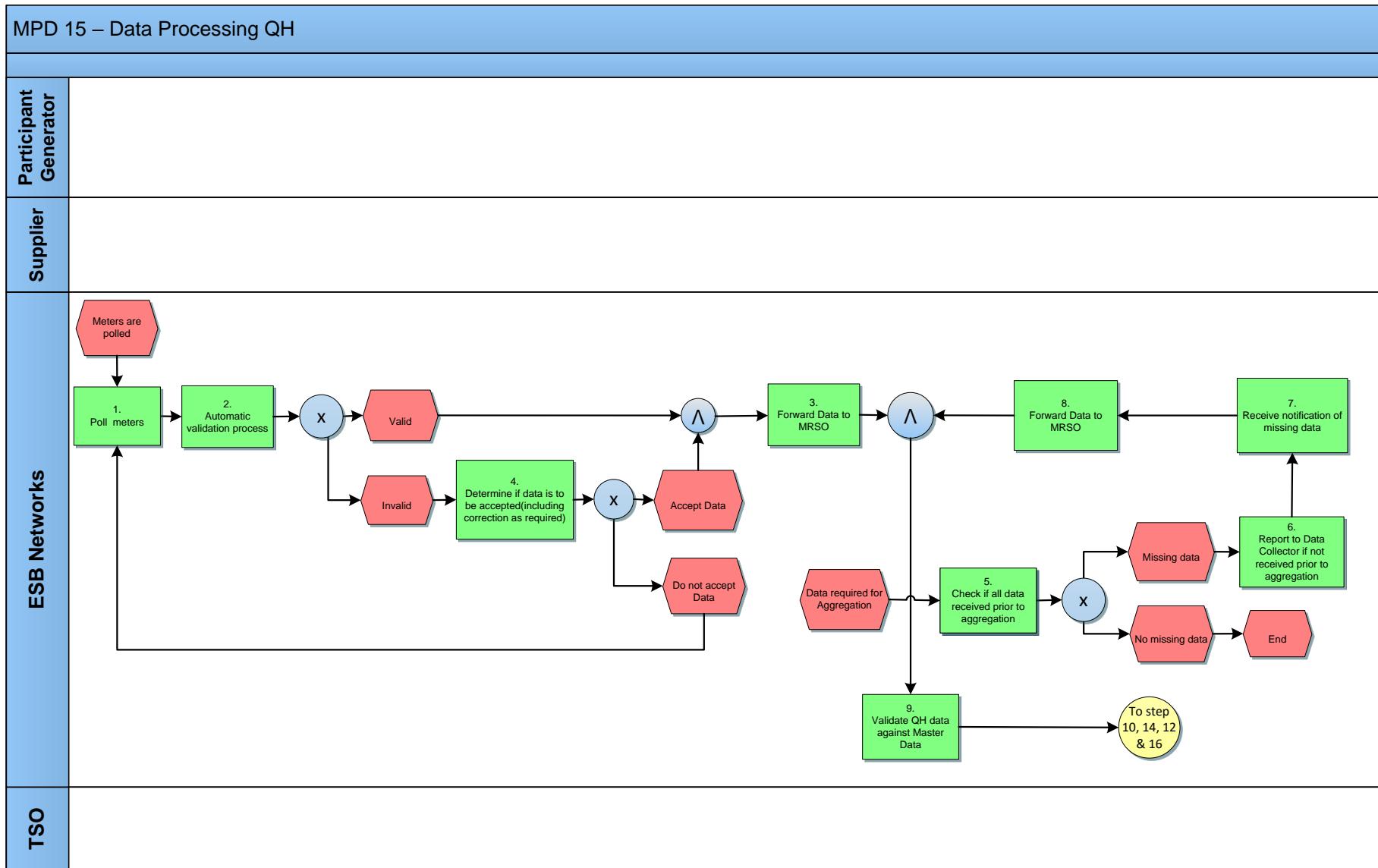This Procedure describes the data processing and verification for QH meter readings and data

1.2 History of Changes

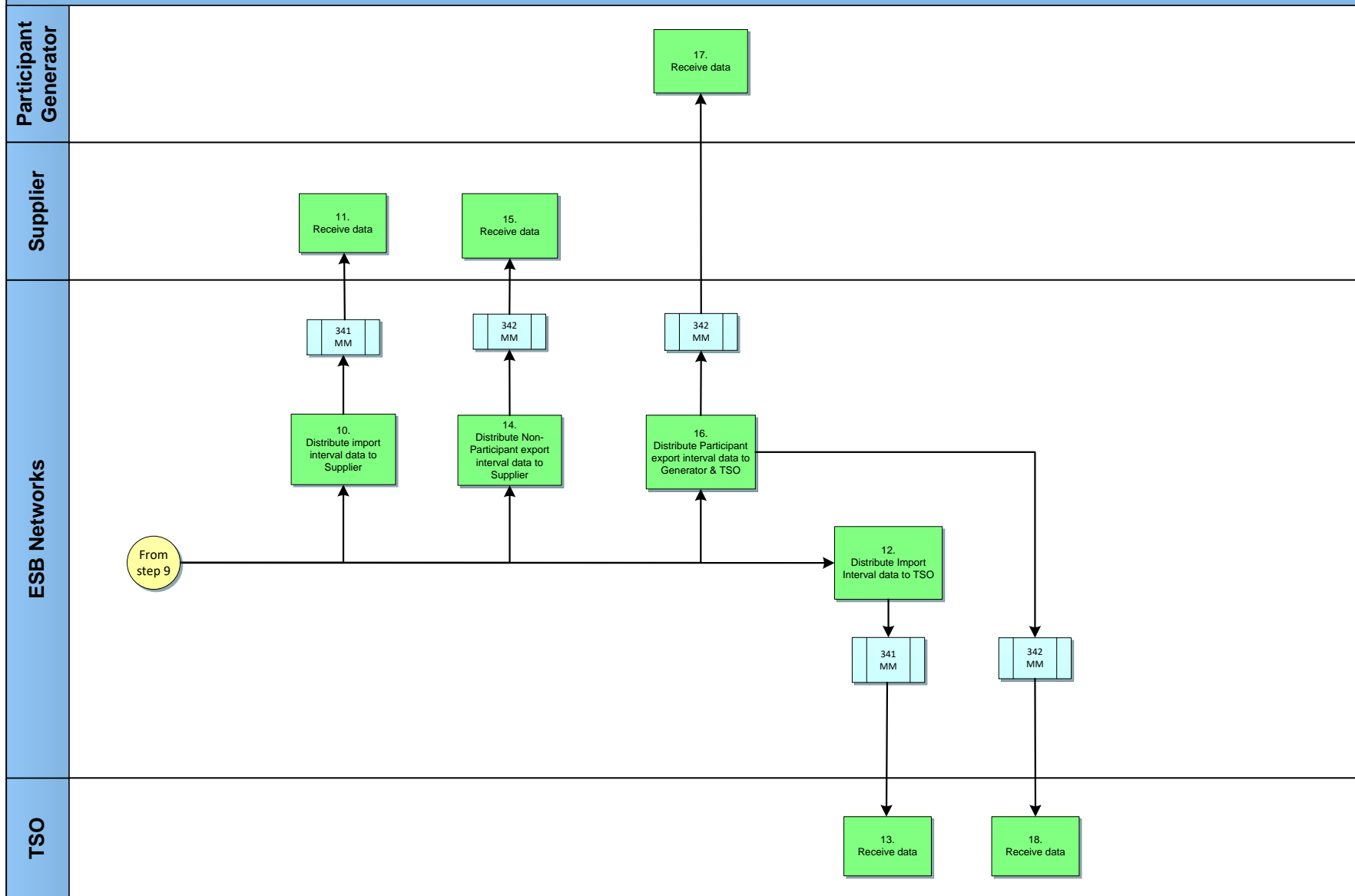This Procedure includes the following changes:

Version in which last change Implemented	Source of Change	Description of Change
Draft	B069	Validation of QH Data
Draft	B070	Communication of Import on Export Sites
Draft	B095	Annual Verification, subject to approval by CER
Draft	B153	Changes to include application of Transformer Loss Factors
Version 4.3	MCR 0044	Information to TSO and Suppliers on netted date on 341 message Removal of Data Aggregation Netting
Version 4.3	DRR 0015	Correction to Page 5 for export sites
Version 4.4	DRR 0083	Update to text to specify channel of communication for notification of changes
Version 5.1	MCR 0072	Minor updates to text in Supplementary Information
Version 6.0	MCR 0097	Amendments to satisfy new requirements surrounding data collection and Non Participant Generators of SEM implementation. This will necessitate changes to: - ARIS Process Flow Diagram, Supporting Text and Supplementary Information.
Version 6.1	MCR 0148	Amendment to satisfy requirements regarding Price Effecting Import within the SEM implementation. Supplementary Information.
Version 6.1	MCR 0149	Amendment to satisfy new requirements the estimation of QH values for Indicative Aggregation in the SEM implementation. This will necessitate changes to:- Supplementary Information
Version 7.0	MCR 0154	Updated the flow to include the 342 message for export.
Version 8.0	RMDS QA	MPD clean-up: objects enlarged to make text readable, swimlane actors shifted left, swimlanes tightened.
Version 8.0	MCR 0084	Business Rules for estimation and substitution of QH meter data added to Supplementary Info for MPD 15: "The QH Data Collector will report to MRSO where estimated or substituted data has been used continuously for more than one week…."
Version 9.0	MCR 0180	As per MCR, MPD 15 updated to show TSO receiving a 342 MM. Supplementary Information also updated to reflect this change

Version in which last change Implemented	Source of Change	Description of Change
Version 10.3	MCR 1145 – Conversion of MPDs from ARIS to document format.	ARIS Process flow converted to Visio format and Step Table included. Supplementary Information: Updated section on Comparison of Register Reads with QH Data: which is in ARIS to updated version from Metering Code *(Ref Metering Code CER/13/281)*
Version 10.4	MCR 180	Step 14 revised to show that the Non-Participant export interval data is also sent to TSO using the 342 MM.
Version 10.6	Non-Conformance identified during Smart Metering Review	Supplementary Information Section 3.4 Estimated Data in Market Message – 1st line replaced to read "QH Interval data will continue to be processed and sent to Market participants as soon as it is available, with a timeline of D+4 for a full set of data to support Initial Aggregation"
Version 10.7	Non-Conformance identified during Smart Metering Review	The following last two sentences on page 15 section 3.7 removed: "This section is included as a Placeholder relating to the Estimation of values by TSO. Content will be clarified following completion of ongoing discussions".
Version 11.3	MCR1182 I-SEM	Changes for MCR1182 V4.0 Impact of I-SEM on the Retail Market in ROI Section 3.6 amended to revise the implications of the removal of the Price Effecting paradigm with the advent of I-SEM.
Version 12.1	MCR1182 I-SEM	Section 3.6 amended to include details of Meter Data Roles and Responsibilities
Version 13.2	MCR1214 Interim Metering Responsibilities Battery Storage	Section 3.6 amended in relation to meter data responsibilities for DSO connection battery storage unit. Section 3.8 Battery Storage added

2. Process Map

MPD 15 – Data Processing QH

Participant Generator	
Supplier	
ESB Networks	Meters are polled → 1. Poll meters → 2. Automatic validation process → X → Valid / Invalid Valid → ∧ → 3. Forward Data to MRSO → ∧ Invalid → 4. Determine if data is to be accepted (including correction as required) → X → Accept Data / Do not accept Data Accept Data → ∧ Do not accept Data → (loop back to 1. Poll meters) Data required for Aggregation → ∧ → 5. Check if all data received prior to aggregation → X → Missing data / No missing data Missing data → 6. Report to Data Collector if not received prior to aggregation → 7. Receive notification of missing data → 8. Forward Data to MRSO → ∧ No missing data → End ∧ → 9. Validate QH data against Master Data → To step 10, 14, 12 & 16
TSO	

MPD 15 – Data Processing QH

Participant Generator

17.
Receive data

Supplier

11.
Receive data

15.
Receive data

ESB Networks

341
MM

342
MM

342
MM

10.
Distribute import
interval data to
Supplier

14.
Distribute Non-
Participant export
interval data to
Supplier

16.
Distribute Participant
export interval data to
Generator & TSO

From
step 9

12.
Distribute Import
Interval data to TSO

341
MM

342
MM

TSO

13.
Receive data

18.
Receive data

2.1 Process Description

	Process Step	Role	Process Step Description	Interface
1.	Poll Meters	ESBN	Meters are polled to capture QH data	
2.	Automatic Validation Process	ESBN	All QH data received is automatically validated - see Section **3.1- Validation for QH data**. Following validation data will be deemed valid or invalid: • Data is valid　　　　　　　-　　　**next step 3** • Data is invalid　　　　　　　-　　　**next step 4**	
3	Forward data to MRSO	ESBN	The Data Collector will make available all data accepted as valid to MRSO **- next step 9**	
4	Determine if data is to be accepted (including correction as required)	ESBN	Where data is found to be erroneous or incomplete the Data Collector shall correct or substitute QH data in accordance with the agreed Validation, Estimation and Substitution Rules for QH Metering. • Data accepted　　　　　　　-　　　**next step back to step 3** • Data not accepted　　　　　-　　　**next step back to step 1**	
5	Check if all data received prior to Aggregation	ESBN	MRSO will check that all data required for Aggregation for a particular day has been received. If not, MRSO will request the Data Collector to provide any missing data. • If no missing data no further follow up • Where there is missing data　　-　　　**next step 6**	
6	Report to Data Collector if not received prior to Aggregation	ESBN	MRSO will advise Data Collector that data is missing for a particular day or days	
7	Receive notification of missing data	ESBN	Data Collector will receive notification that data is missing for particular days	
8	Forward data to MRSO	ESBN	Where QH data is not available by the required date the Data Collector shall procure or shall otherwise estimate QH data in accordance with the agreed Validation, Estimation and Substitution Rules for QH Metering. The data will be made available to MRSO.	

	Process Step	Role	Process Step Description	Interface
9	Validate QH data against Master Data	ESBN	When QH data is available from the Data Collector, MRSO will validate against the master data held for the Meter Point - see Section **3.2 Master Data Validation for QH Data.** All invalid conditions will be investigated. Invalid data will be distributed and aggregated provided a Supplier and/or Generator can be identified.	
10	Distribute import interval data to Supplier	ESBN	For each QH meter where import occurs on an export site that is netted for DUoS purposes then both gross and nett import kWh are communicated to the Supplier for active power on the 341 Market Message. Where export exceeds import in an interval then the nett import communicated is zero. Gross import only shall be communicated to the Supplier in all cases for: • Active Power where there is not netting for DUoS purposes • Reactive Power Where a Transformer Loss factor is to be applied to kW and kVAr readings then the values after the application of the factor will be sent. These values are used in Aggregation. Import and Export QH data is distributed separately for a specific read date as and when a complete set of data is available. For Import data the 341 Market Message will not contain data within the Generator MPID and Generation Unit ID fields.	341 MM
11	Receive data	Supplier	The Supplier receives the data	
12	Distribute import interval data to TSO	ESBN	A copy of the import data sent to the Supplier will be sent to the Transmission System Operators following validation	341 MM
13	Receive data	TSO	The TSO receives the data	
14	Distribute Non Participant Export Interval Data to Supplier	ESBN	For meter points that are Non Participant Generators, Market Message 342 containing QH export data will be sent to the Supplier nominated in the export arrangement Where the output sales have been split , 342 messages containing the split QH export data will be sent to the Supplier nominated in the export arrangement. Where there are percentage split export arrangements in place, the Active Power split will be calculated and populated on a 342 Market Message per export arrangement. There will be no Reactive Power on these 342 messages. For Non-Participant Generator Export data the 342 Market Message will not contain data within the Generator MPID field but will contain an Export Arrangement reference number within the Generation Unit ID field.	342 MM

	Process Step	Role	Process Step Description	Interface
15	Receive data	Supplier	The Supplier receives the data	
16	Receive data	TSO	TSO receive Non Participant export interval data.	
17	Distribute Participant Export Interval data to Generator and TSO	ESBN	For meter points that are Participant Generator sites all export QH data will be sent to the Generator (**next step 17**) and to the TSO (**next step 18**) following validation	342 MM
18	Receive data	Participant Generator	The Participant Generator receives data	
19	Receive data	TSO	TSO receive Participant Generator export QH data	

3. Supplementary Information

3.1 Validation for QH Data

The Data Collector shall undertake the following validations and checks on an ongoing basis as described in the QH Validation, Estimation and Substitution Rules.

- Data is collected from expected Device Id
- Number of channels is as expected
- Device time is as expected
- Pulse overflows
- Number of time intervals collected is as expected
- Data does not exceed high or low demand values
- Difference between total of QH Data and advances determined from cumulative energy registers does not exceed 2%
- Alarms
- Zero intervals do not exceed tolerance

3.2 Master Data Validation for QH Data

MRSO will check and investigate the following situations:

- Data is received for a date where the meter point is terminated on the date.
- Non zero QH data occurs during a day throughout which the Meter Point is not energised
- An export site may validly have no Generation Unit ID associated depending on whether or not it is relevant for settlement. MRSO will carry out a manual periodic audit check on such sites to ensure correct records are maintained
- Import occurs and there is no Supplier associated with the Meter Point
- Data is received for a date where the site is registered as NQH
- MPRN has MEC > 0 and no Generation Unit ID or Export Arrangement

3.3 Data Replacement

The Data Collector may replace QH data at any time.   In general, data will only be replaced if:

- A meter is proved to be inaccurate or faulty, or tampering has occurred
- QH data is proved to be inaccurate
- Actual data becomes available where an estimate was previously provided
- A more accurate estimate becomes available, as calculated from actual register data that has become available

The first version of data issued in a 341 for a particular MPRN/Read date combination will contain a value of '1' in the ReadingReplacementVersionNumber field. If a subsequent version of data is sent then the value in the ReadingReplacementVersionNumber field will increment by one.

The first version of data issued in a 342 for a particular MPRN/Generator Unit (or EARN)/Read date combination will contain a value of '1' in the ReadingReplacementVersionNumber field. If a subsequent version of data is sent then the value in the ReadingReplacementVersionNumber field will increment by one.

3.4 Estimated Data in Market Messages

QH Interval data will continue to be processed and sent to Market participants as soon as it is available, with a timeline of D+4 for a full set of data to support Initial Aggregation.

Existing processes for replacement data will continue i.e. where actuals replace estimates, these will continue to be sent to Market participants as soon as possible.

Existing SLA for the provision of 100% QH data for Supplier/TUOS Billing purposes –currently by D+10 - is unaffected.

Indicative Aggregation is required at D+1. This means that all QH read data, import and export, if available, be collected for all QH sites included in Indicative Aggregation. Where no read data is available it must be estimated for use in Indicative Aggregation.

A basic estimate will be calculated during Indicative Data Aggregation for QH sites where there are no reads. The Basic Rules for the calculation of the estimates are proposed to be:

QH Import

1. Default the missing values to Nil where the site is De-Energised
2. If the site is energised, copy the missing data from the same day the previous week – note that this will be done for all days including where there are Bank Holidays
   - If there is no data available from the previous week, then copy the missing data from the same day 4 weeks ago
   - If there is still no data available from the same day 4 weeks ago, then default the missing values to Nil.

The QH Data Collector will report to MRSO where estimated or substituted data has been used continuously for more than one week, and the reasons for same and thereafter to report two weekly to MRSO on status of the site until actual data is obtained for a particular site.

MRSO will in turn report to a particular Supplier until the problem is resolved. This process will apply equally to import and export sites.

Exceptions – Clock Change Day

For 'long days', the estimate will be copied from 00:00:00 of the previous Sunday into the first hour of the Monday up until 00:59:59

For 'short days', the estimate will be copied from 00:00:00 of the previous Sunday up to 22:59:59.

Notes

The estimate routine will copy each interval in sequence even though at a clock change the hour is added or subtracted from 1-2am.

If a day is a normal day and the same day the previous week was a long day, the estimate will be the same day the previous week less the last hour, from 23:00 to 23:59.

QH Export

1. The proposal is to estimate NIL

MRSO will not include this QH data that was estimated by the Indicative Aggregation process in the 341/342 QH read Market Message.

Therefore, the practice for the 341/342 Message is

- Actual data will always be sent
- On D+4 if there are no reads, then the data collector will provide MRSO with estimates for Initial Data Aggregation in accordance with the QH Estimation, Substitution, and Validation rules
- These Data Collector estimates will be used within Initial Aggregation and sent out on the 341/342 messages.
- Note that in an exceptional circumstance where the Data Collector fails to provide an estimate at D+4, the value created within Indicative Aggregation at D+1 will be used in Initial Aggregation. Only QH interval data (actual or estimate) that is provided by the QH data collector will be sent via 341/342.

Initial Aggregation is required at D+4. This means that all QH read data, import and export, must in so far as possible, be collected for all QH sites included in Initial Aggregation.

- When actual data has been subsequently obtained where previously it was estimated for the D+1 Indicative Aggregation, the actual data will be used in Initial Aggregation.

341/342 Market message at D+4

At D+4, the 341/342 Market messages sent to Market Participants will include:

- actual data that has arrived on D+4 and has replaced an estimate generated for Indicative Data Aggregation at D+1
- estimated data provided by the Data Collector on D+4 if no actual has been received.
- estimated data from D+1 if no actual or estimate from the Data Collector has been received
- and in addition, as normal, any other actual data that has been collected that day
- and actual data received at D+1,D+2,D+3 will already have been issued

3.5 Market Messaging

Scenario	Via Message
All Import data will be issued to the TSO and to the Supplier registered for import	341
Participant Export Data will be sent to the Participant Generator (or their nominated Supplier as per Working Practice 012) and to TSO.	342
Non Participant Export Data per export arrangement will be sent to the Supplier nominated in the export arrangement. A Copy will be sent to TSO. For details of Non Participant Generators and Export Arrangements see MPD 7(1.1) New DSO-Connected Non-Participant Generator Sites	342

3.6 Responsibilities between MRSO and TSO for Polling and Publishing Data

For the SEM, Roles and Responsibilities of the two Meter Data Providers in Ireland have changed. Changes include new type units AGU and DSU. It is also understood that for the I-SEM meter data will become Non-Price effecting.
As an interim measure EirGrid will be acting as Meter Data Provider for DSO connected Battery Storage units and will provide the import and export data in a single data stream to SEMO.

The Roles and Responsibilities for the two Meter Data Providers in Ireland in the SEM are documented in detail in the following document on the SEM website :

Meter Data Roles & Responsibilities

:

3.7 Reconciliation of Display Reading for DSO Connected Metering (Ref Metering Code CER/13/281)

3.7.1 Cumulative total Active and Reactive Energy Registers from Meters are read remotely each day and are compared with the electronically recorded total energy for the same time period, as part of the ongoing data validation by DSO. This energy tolerance calculation is carried out by the central Data Collection System, and differences greater than ±2% result in automatic rejection of the metered data.

3.7.2 If the cumulative total energy Register **is not** available remotely, then a manual read will be taken at twelve monthly intervals for checking purposes.

3.7.3 For meters where the cumulative total energy Register **is** available to be read remotely, a manual read will be taken at twelve monthly intervals for checking purposes from a random sample of 5% of these metering sites, and:

(1) Within twenty [20] Business Days from the date of a manual meter reading a meter reconciliation statement shall be produced. The difference between the latest manual meter register readings and the previous manual meter register readings shall be calculated and compared with the electronically recorded total energy for the time interval involved, and

(2) The calculations shall be recorded and differences greater than 0.1% shall be highlighted and referred for checking. Where the checks confirm the discrepancy the MRSO and other parties as required shall be informed and appropriate actions shall be taken in accordance with the procedures set out by the MRSO.

3.8 Battery Storage

As an interim measure EirGrid will be acting as Meter Data Provider for DSO connected Battery Storage units and will provide the import and export data in a single data stream to SEMO.

DSO connected Battery Storage units will not be sent 342 messages from MRSO, instead, meter data will be available to the participant via the established wholesale market mechanisms.

MRSO will send 341 market messages to the registered supplier and TSO based on the following:

- If the Battery Storage unit is transmission connected EirGrid will provide the QH import read data to MRSO.
- If the Battery Storage unit is distribution connected ESB Networks will, in addition to EirGrid, poll the import for these sites.

DUoS for Battery Storage units will be billed in accordance with MPD 34 DUoS, Transaction and PSO Payment Process.