MARKET PROCESS DESIGN

MPD 16 2.1 – Data Aggregation

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1. Introduction

1.1 Scope

This Procedure describes the process for Data Aggregation.

1.2 History of Changes

This Procedure includes the following changes:-

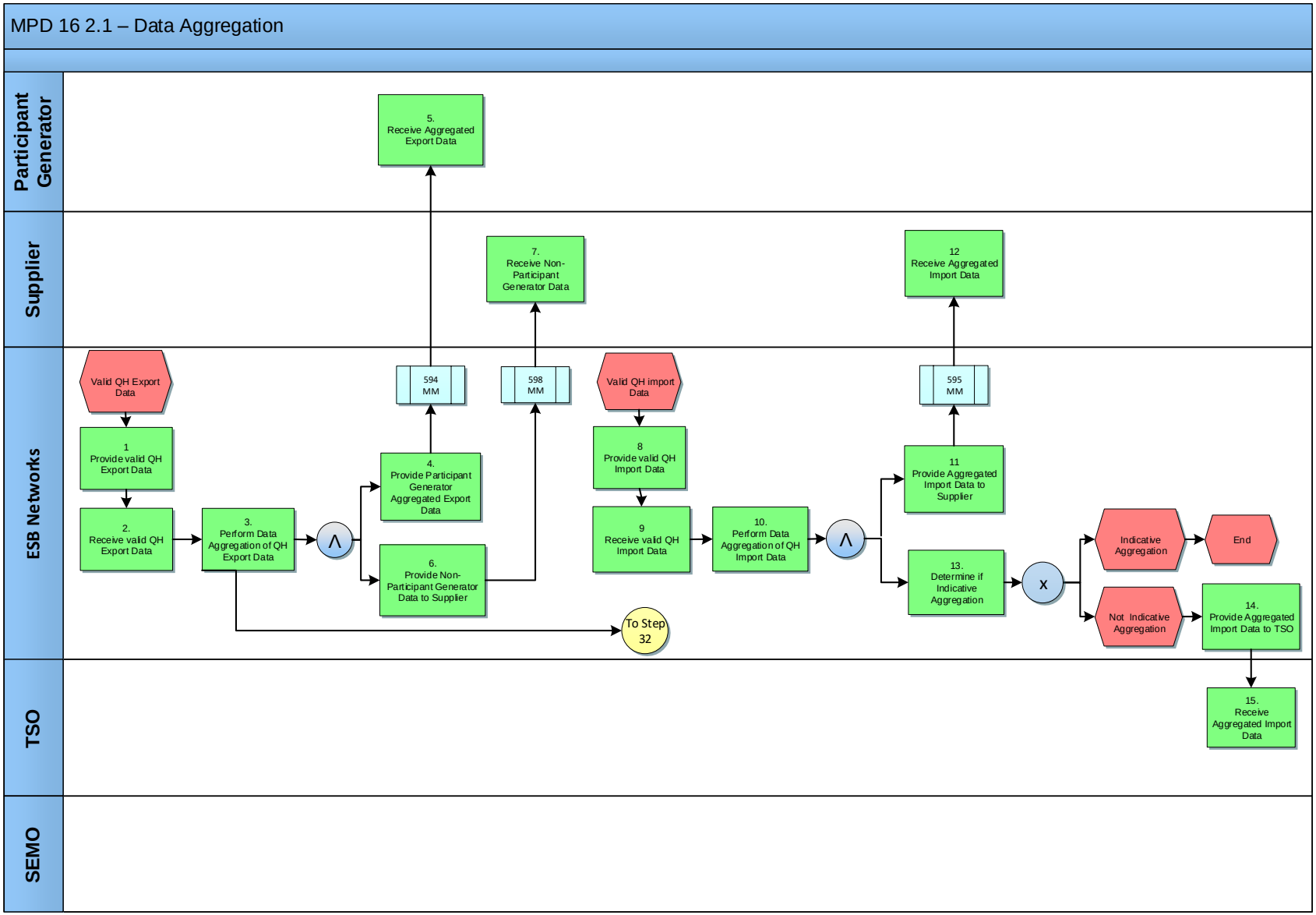
Version in which last change Implemented	Source of Change	Description of Change
Draft	259	Changes to aggregation approach incorporating re-aggregation and usage factors
Draft		Standardisation of use of QH/NQH terminology
Draft		Removed Section 5.9 as this is now covered by MPD 14 – NQH Readings Processing
		Updates arising from Supplier Clarifications
Draft	Written Supplier Clarifications 1 B202	Updated title of Process map on page 8 to remove Non Profile reference.
Draft	Updated text around Steps 7,8 on to clarify process	Updated text around Steps 7,8 on to clarify process
Draft	Written Supplier Clarifications 2	Settlement Interval Period renamed to Settlement Interval for consistency with Data Definitions
Draft	Written Supplier Clarification 3, 5	Updated scope of document. Term 'Independent Supplier' removed.
Version 4.2	MCR 0029	Update of Market Process Documentation to reflect single point unmetered design

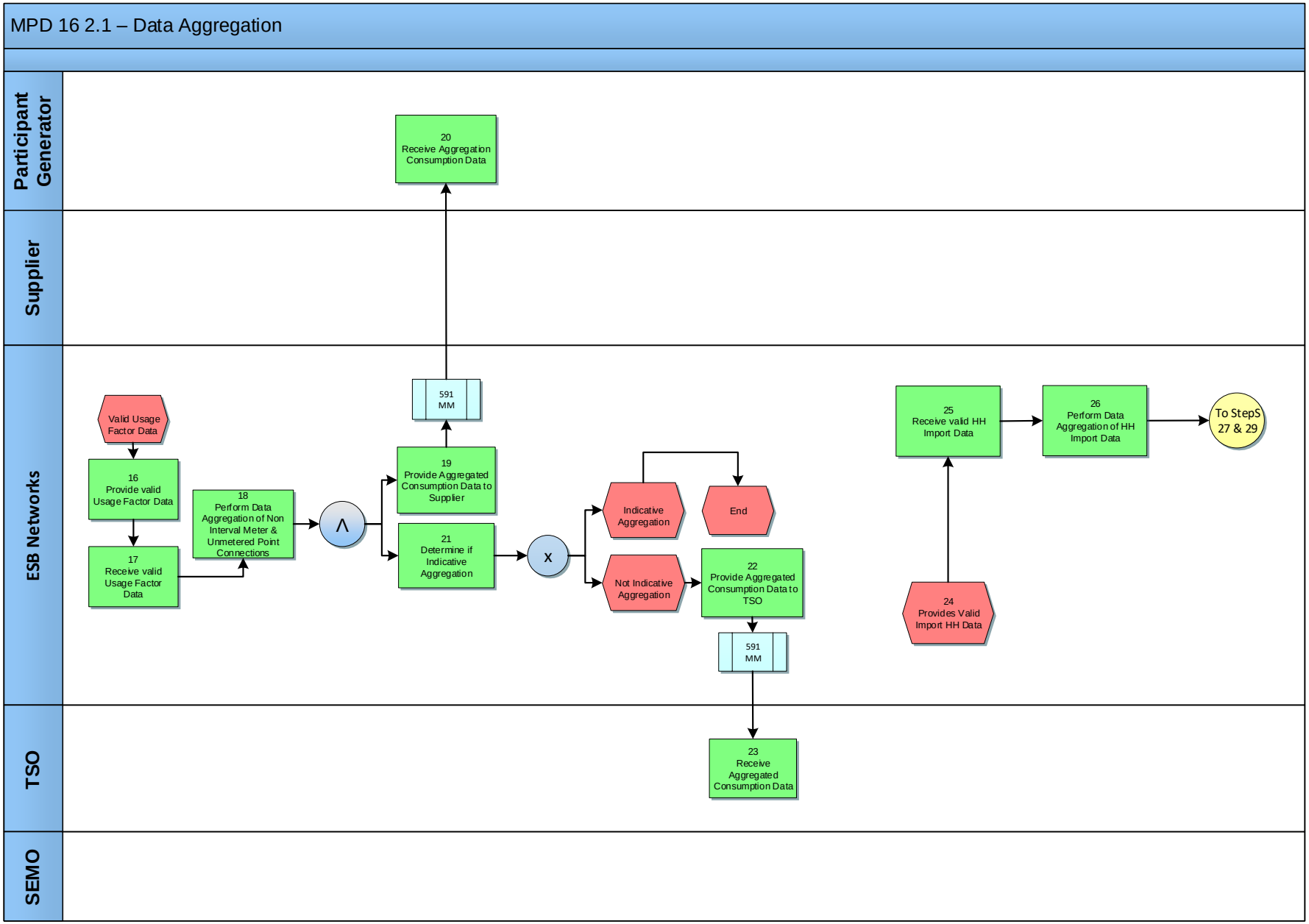
Version in which last change Implemented	Source of Change	Description of Change
Version 4.2	MCR 003 / CR00556	Suppliers have requested a change to include on the 501 message:- •Total usage factor per Time of Use and Profile •The count of MPRNs used in the aggregation run for the above Time of Use & Profile in order to validate the aggregation run results.
Version 4.3	MCR 0044	Removal of Data Aggregation Netting Functionality
Version 4.3	MCR 0045	SSA Controls Section 5.10
Version 5.1	MCR 0075	NQH consumption will be resettled on a half hourly basis for the time since January 2005 until the SEM arrangements are fully phased in. To carry out the resettlement, they require 15 minute reaggregation difference information rather than at rolled up single day and night difference.
Version 6.0	MCR 0068 V.3	The 591 message amended to only allow valid combinations of DLF Code & Load Profile.
Version 6.0	MCR 0112	Amendments to satisfy requirements of SEM implementation. The current 3 streams of MPD16 (1.1 – 1.3) will be replaced by the following :- MPD 16 2.1 Data Aggregation This will necessitate changes to:- ARIS Process Flow diagram, ARIS Process Flow – supporting text, Supplementary Information and Market Message structures.
Version 6.1	MCR 0131	Amendments to satisfy requirements of SEM implementation. MPD 16 2.1 Data Aggregation v6.0 This will necessitate changes to:- Step 44 of the supporting text of MPD 16.2
Version 6.1	MCR 0135	Updates to 595 Market Message. included the addition of the following 3 fields to the 595 Market Message in relation to the QH Import validation: • Count of MPRN(Existing field within the 591 MM) • Percentage of MPRNs Estimated (New Field) • Percentage of Consumption Actual (New Field)

Version in which last change Implemented	Source of Change	Description of Change
Version 6.1	MCR 0140	Clarifications regarding the 591 Market Message
Version 6.1	MCR 0148	Amendment to satisfy requirements regarding Price Effecting Import within the SEM implementation. Supplementary Information.
Version 8.0	RMDS QA	No business changes applied. MPD clean-up: objects enlarged to make text readable, swimlane actors shifted left, swimlanes tightened.
Version 9.0	MCR 0178	Supplementary Information reflects the update from MCR whereby the business functionality "limit Supplier Units to zero if it contains a positive number" and "inform the Supplier and SMO" has been turned off. The Description for Step "Provide Aggregated Data To SMO", was also updated to reflect this change
Version 10.5	MCR 1165 – Conversion of MPDs from ARIS to document format.	ARIS Process flow converted to Visio format and Step Table. included. SMO changed to SEMO. The following Non-conformances were corrected: AIQ 2784 – Description for Step 24, "MRSO will subtract, per 30 minute interval, changed to read "MRSO will add.." AIQ 2747 – Description for Step 24 – the line "Fourth, where the result of this subtraction is a positive value, it will be set to nil" was deleted. AIQ 2820 - Changes documented in MCR0178 reflected in MPD.
Version 11.1	MM595 incorrect	Process Map Step 11 to 12 – MM595 was incorrectly shown as MM598.

Version in which last change Implemented	Source of Change	Description of Change
Version 11.3	MCR1182 I-SEM	Changes for MCR1182 V4.0 Impact of I-SEM on the Retail Market in ROI Section 3.13 and 3.14 amended to revise the implications of the removal of the Price Effecting paradigm with the advent of I-SEM.
Version 10.3 SMART 1.0	NSMP - ESBN Workstream workshops	Submitted as DR v1.0 (and MCR v2.0) for ReMCoWG 17.06.2015
Version 13.0	MCR 1157	Process Step and process Step description updated.
Version 13.2	MCR1214 Interim Metering Responsibilities for Battery Storage	Section 3.17 added.

2. Process Map





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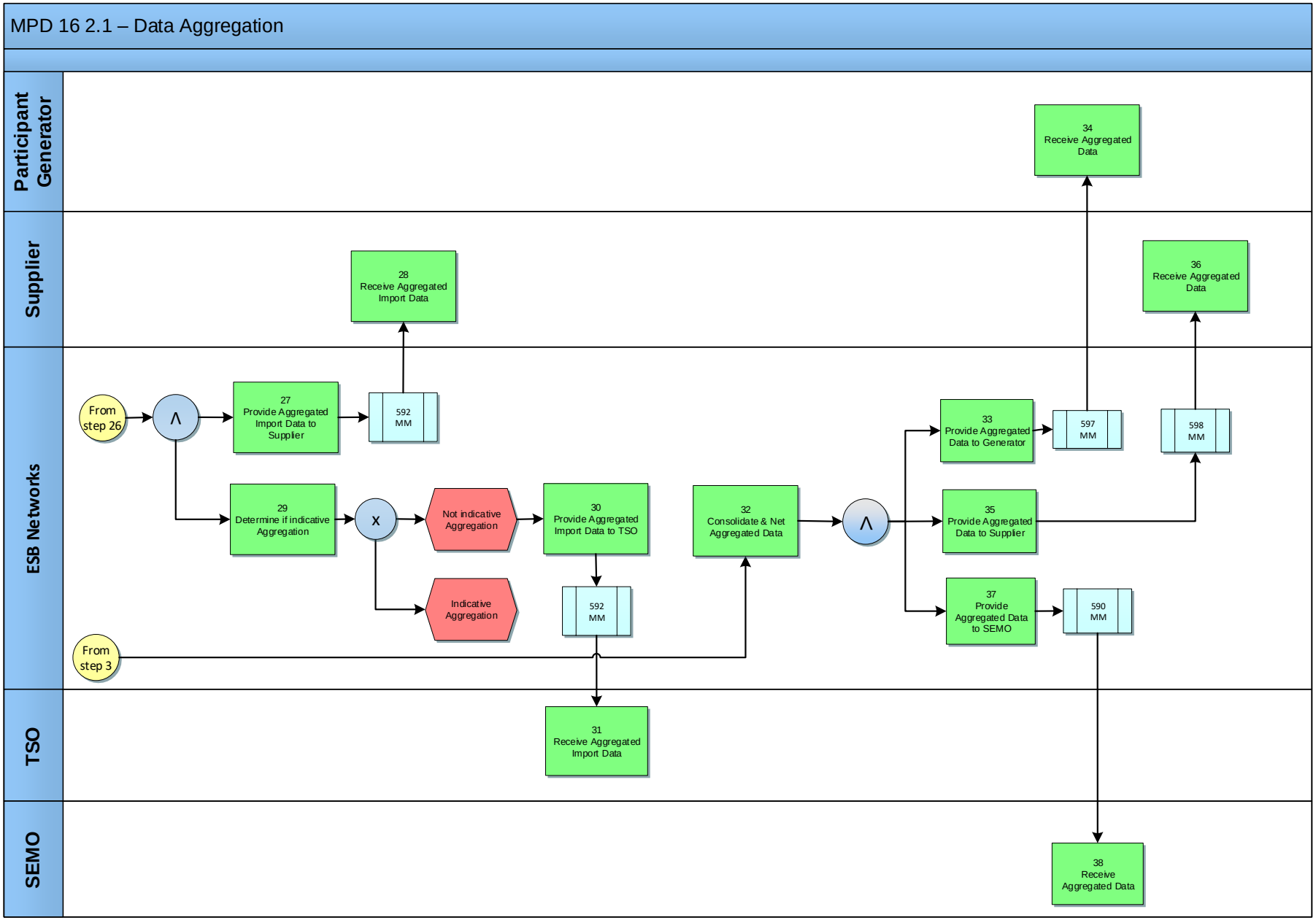
MPD 16 2.1 – Data Aggregation
Participant Generator
Supplier
ESB Networks
TSO
SEMO
From step 26
27 Provide Aggregated Import Data to Supplier
592 MM
28 Receive Aggregated Import Data
29 Determine if indicative Aggregation
Not indicative Aggregation
Indicative Aggregation
30 Provide Aggregated Import Data to TSO
592 MM
31 Receive Aggregated Import Data
From step 3
32 Consolidate & Net Aggregated Data
33 Provide Aggregated Data to Generator
597 MM
34 Receive Aggregated Data
35 Provide Aggregated Data to Supplier
598 MM
36 Receive Aggregated Data
37 Provide Aggregated Data to SEMO
590 MM
38 Receive Aggregated Data

2.1 Process Description

Process Step		Role	Process Step Description	Interface
1	Provide valid QH Export Data	ESBN	The Data Processor will provide valid QH Export Data into the aggregation process. The Data Processor may also provide new or revised export data following an aggregation.	
2	Receive valid QH Export Data	ESBN	MRSO receives valid QH Export Data. In exceptional circumstances MRSO may update Generation Unit or DLF data following an aggregation.	
3	Perform Data Aggregation of QH Export Data	ESBN	MRSO will aggregate export data for Distribution Connected Generators using the latest validated readings and estimates that are received from the Data Collector for the settlement day being aggregated. Export kWs are converted to kWh for aggregation. MRSO will commence aggregation of data for a Distribution Connected Participant Generator export from the date it is effective in the SEM. MRSO will commence aggregation of data for a Distribution Connected Non Participant Generator export from the Effective Date [Agreed Procedure 1, Appendix 3, will set out more detail on the effective date for a participant] of the Export Arrangements. Gross export per Generator Unit or Export Arrangement will be aggregated. Aggregated data will contain aggregation values both including and excluding the application of DLF applicable to the Settlement Interval for the Generator Unit or Export Arrangement.	
4	Provide Participant Generator Aggregated Export Data	ESBN	ESBN sends export data per Generator Unit to the relevant Participant Generator.	594 MM
5	Receive Aggregated Export Data	Participant Generator	Participant Generator receives Aggregated Export Data.	

Process Step		Role	Process Step Description	Interface
6	Provide Non-Participant Generator Data to Supplier	ESBN	ESBN sends export data from Non Participant Generators to the relevant Suppliers, per Export Arrangement.	598 MM
7	Receive Non-Participant Generator Data	Supplier	Supplier receives Non-Participant Generator Data.	
8	Provide valid QH Import data	ESBN	The Data Processor will provide valid QH Import Data.	
9	Receive valid QH Import Data	ESBN	MRSO receives valid QH Import Data.	
10	Perform Data Aggregation of QH Import Data	ESBN	MRSO will aggregate Import data for Meter Points registered to Suppliers using the latest validated readings and estimates that are received from the Data Collector for the settlement day being aggregated. Import kW is converted to kWh for aggregation. For Meter Points which are aggregated for both Import and export, gross Import will be aggregated. Aggregated Import data will be summarised by Supplier, Supplier Unit and SSAC registered on the Settlement Date. Aggregated data will contain values both including and excluding the application of DLF applicable for the DLF Code and Settlement Interval.	
11	Provide Aggregated Import Data to Supplier	ESBN	Aggregated QH Import data will be sent to the relevant Supplier. Data will be summarised per Settlement Date, 15 minute Settlement Interval, Supplier, Supplier Unit and SSAC registered on the Settlement Date and will include a breakdown by DLF code.	595 MM
12	Receive Aggregated Import Data	Supplier	Supplier receives Aggregated Import Data.	
13	Determine if Indicative Aggregation	ESBN	Determine if Indicative Aggregation. • Not Indicative Aggregation - **next step 14.** • If Indicative Aggregation no further action.	

Process Step		Role	Process Step Description	Interface
14	Provide Aggregated Import Data to TSO	ESBN	MRSO send a copy of the Aggregated Import Data to the TSO.	595 MM
15	Receive Aggregation Import Data	TSO	TSO Receive Aggregated Import Data.	
16	Provide valid Usage Factor Data	ESBN	ESBN Provides valid usage factor data.	
17	Receive valid Usage Factor Data	ESBN	ESBN Receives valid usage factor data.	
18	Perform Data Aggregation of Non Interval Meter & Unmetered Point Connections	ESBN	MRSO will aggregate consumption using the Usage Factors applying to each Timeslot associated with Meter Points registered to Suppliers on the Settlement Date. Actual Usage Factors will be used if available at the point of time aggregation, otherwise Estimated Usage Factors are used. The application and calculation of Usage Factors is described in MPD 14 – Readings Processing – Non Interval . MRSO will profile consumption for each 15 minute Settlement Interval within a Settlement Date by applying to the Usage Factor the interval coefficients defined for the applicable Derived Load Profile. No estimated usage is aggregated in respect of a Meter Point that is de-energised. Aggregated data will contain values both including and excluding the application of DLF applicable for the DLF Code and Settlement Interval. The Additional Aggregated Information segment will also include the count of MPRN processed in aggregation per DLF Code and Load Profile combination for the Supplier, Supplier Unit & SSAC classification. The Additional Aggregated Data segment will also include the total usage factor processed in aggregation per DLF Code and Load Profile combination for the Supplier, Supplier Unit and SSAC classification' to 'per DLF Code and Load Profile combination for each Supplier, Supplier Unit and SSAC classification' in both sentences.	

Process Step		Role	Process Step Description	Interface
19	Provide Aggregated Consumption Data to Supplier	ESBN	MRSO send Aggregated consumption data per Supplier, Supplier Unit, SSAC combination to the relevant Supplier and will include a breakdown by Load Profile and DLF code.	591 MM
20	Receive Aggregation Consumption Data	Participant Generator	Participant Generator Receives Aggregated Consumption Data.	
21	Determine if indicative Aggregation	ESBN	Determine if Indicative Aggregation. • Not Indicative Aggregation - **next step 22** If indicative aggregation no further action.	
22	Provide Aggregated Consumption Data to TSO	ESBN	MRSO send a copy of the Aggregated Consumption Data sent to the Supplier to the TSO.	591 MM
23	Receive Aggregated Consumption Data	TSO	TSO Receive Aggregated Consumption Data.	
24	Provides Valid HH Import Data	ESBN	The Data Processor will provide valid Half Hourly Import Data into the aggregation process. The Data Processor may also provide new or revised import data following an aggregation. In exceptional circumstances MRSO may update Supplier, SSAC or DLF data following an aggregation.	
25	Receive Valid HH Import Data	ESBN	MRSO receives valid Half Hourly Import Data.	
26	Perform Data Aggregation of HH Import Data	ESBN	MRSO will aggregate import data for Meter Points registered to Suppliers using the latest validated readings and estimates that are received from the Data Processor for the settlement day being aggregated. Import kW are converted to kWh for aggregation. Aggregated import data will be summarised by Supplier, Supplier Unit and SSAC registered on the Settlement Date. Aggregated data will contain values both including and excluding the application of DLF applicable for the DLF Code and Settlement Interval.	

Process Step		Role	Process Step Description	Interface
27	Provide Aggregated Import Data to the Supplier	ESBN	Aggregated Half Hourly import data will be sent to the relevant Supplier. Data will be summarised per Settlement Date, 30 minute Settlement Interval, Supplier, Supplier Unit and SSAC registered on the Settlement Date and will include a breakdown by DLF code.	592 MM
28	Receive Aggregated Import Data	Supplier	The Supplier receives the Aggregated Import Data	
29	Determine if Indicative Aggregation	ESBN	Determine if Indicative Aggregation. • Not Indicative Aggregation - **next step 30** • If Indicative aggregation no further action.	
30	Provide Aggregated Import Data to TSO	ESBN	A copy of the Aggregated Import Data sent to the Supplier will be sent to the TSO.	592
31	Receive Aggregated Import Data	TSO	TSO Receive Aggregated Import Data	
32	Consolidate & Net Aggregated Data	ESBN	In order to provide complete aggregated Import and export at Supplier Unit and Generator Unit level the previous aggregated data is consolidated by the MRSO and the following actions taken:- All values used are loss adjusted, and the calculations for every step are carried out at a Supplier Unit level First, for each Supplier Unit, for every 15-minute Interval , add the corresponding Non Interval Import Data and the QH Import Data Second, summate the 15-minute Import Interval Data to 30-minute Import Interval Data Third, add each 30-minute Smart Half Hourly Import Interval Data to its corresponding summated 30-minute Non Interval/QH Import Intervals and multiply the total by -1 Fourth, summate to 15-minute Intervals all Non Participant Generator Data that	

Process Step		Role	Process Step Description	Interface
			has been registered to each Supplier Unit Fifth, summate the 15-minute Non Participant Generation Interval Data to 30-minute Interval Data Sixth, add each 30-minute Import Interval to each corresponding 30 minute Non Participant Generation interval Data for each supplier Unit. Finally, MRSO will convert the kWhs data to MWhs by division by 1000, representing MWh to three decimal places. This is called the Measured Quantity	
33	Provide Aggregated Data to Generator	ESBN	Loss Adjusted aggregated export data sent to the SEMO at Generator Unit level that is relevant to a Participant Generator will also be sent to that Participant Generator.	597 MM
34	Receive Aggregated Data	Participant Generator	Participant Generator Receives Aggregated Data.	
35	Provide Aggregated Data to Supplier	ESBN	Loss Adjusted aggregated data sent to the SEMO at Supplier Unit Level that is relevant to a Supplier will also be sent to that Supplier.	598 MM
36	Receive Aggregated Data	Supplier	Supplier Receives Aggregated Data.	
37	Provide Aggregated Data to SEMO	ESBN	Loss Adjusted aggregated data will be sent to the SEMO indicating the Measured Quantity per 30-minute settlement interval, per Supplier Unit or Generator Unit.	590 MM
38	Receive Aggregated Data	SEMO	SEMO Receives Aggregated Data.	

3. Supplementary Information

3.1 Loss factors

The DSO will identify the Distribution Loss Factors (DLF) applying to each meter point through the definition of an appropriate DLF Code and DLF value.

For Distribution Connected Generators a site specific DLF will be applied. For other Meter Points, DLF shall be applied according to the connection voltage and settlement class – QH / Non QH.

3.2 Profile Co-efficients

The DSO will identify the profile coefficients applying to each settlement interval for each Load Profile. Profile coefficients will be identified in advance for each year and will take account of weekends and public holidays. Profile coefficients are expected to sum to 1 for a 365 day year.

3.3 Settlement Dates and Intervals

A Settlement Date is the calendar day on which export or Import consumption is determined to have occurred. When the Settlement Date is a day in which the clocks are advanced it shall have 23 hours and when the Settlement Date is a day in which the clocks are put back it shall have 25 hours.

A Settlement Interval within the Retail Market is defined as a fifteen or thirty minute period. For QH, there shall normally be 96 Settlement Intervals in a day but there can be 92 or 100 when the clocks are changed. For Half Hourly, there shall normally be 48 Settlement Intervals in a day but there can be 46 or 50 when the clocks are changed. Within the Wholesale Market a Settlement Interval is defined as a thirty minute period. As such, there shall normally be 48 Wholesale Market Settlement Intervals in a day but there can be 46 or 50 when the clocks are changed.

3.4 Derived Load Profiles

For each Timeslot to be settled a Derived Load Profile will be allocated in accordance with published rules for the combination of:-
For non-MD sites, whether the meter point is rural domestic, urban domestic or non-domestic, as determined by the DUoS Group.
For MD sites, the load factor.
The Timeslot to be settled.

The Derived Load Profile is a set of interval coefficients determined from a researched or sampled Standard Load Profile which are specific to the Timeslot, which sum to the same as the profile from which the derivation is made (1 over a 365-day year). Derived Load Profiles applied at a Meter Point may be determined from more than one Standard Load Profile (e.g. where both 24 hour and night storage meters are installed).

3.5 Day / Night Split for Aggregation

For customers connected at LV with meters on Non Interval MCCs, day-time DLFs shall apply from 8:00 am to 11:00 pm in winter and 9:00 am to 12:00 midnight during summer. For LV customers with Interval meters, MV and 38kV customers, day-time DLFs shall apply from 8:00 am to 11:00 pm, summer and winter Night-time DLFs shall apply to the remaining hours of the settlement day.

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3.6 Records

MRSO will maintain a record of input to Indicative, Initial, Ad Hoc and both 4 and 13 month Re-Aggregation runs identifying the Generator, Supplier, SSAC, Loss Factor Code, Profiles and Usage Factor Data used for each Meter Point.

3.7 Timings

Indicative Aggregation will occur on the week day following the Settlement Date.
Initial Aggregation will occur on the fourth week day following the Settlement Date.
A Re-aggregation will occur four months following the Settlement Date.
A Re-aggregation will occur thirteen months following the Settlement Date.

3.8 Unmetered Connections

Unmetered Connections are managed within aggregation at TMPRN level. As such, information is distributed in the same process & messages as per Non Interval .

3.9 The 591 Market Message

The 591 Market Message only allows valid combinations of DLF Code & Load Profile.

3.10 Netting of Non Participant Generation

De Minimus Generators that elect not to participate in the SEM can register Supplier Units against their export via Export Agreements. Prior to the issue of aggregated data to the SEMO this loss adjusted export will be netted, per Settlement Interval, from the aggregated loss adjusted Import recorded against that Supplier Unit.

3.11 Signing

The following Signing standards will apply across consumption/generation quantities within the Data Aggregation message:-
Supplier Unit data will be signed both (negative values) and unsigned(positive values)
Generator Unit Data will not be signed in messages 590 and 597
Zeros will not be signed in all messages
591, 594, 595, 598 and 592 – The Demand and Generation values will not be signed.

3.12 Price Effecting Generation

For Aggregations for Settlement days up to the last day of the SEM:

Where Distribution Connected Participant Generators have Price Effecting Generation they will not be sent 594 or 597 messages from MRSO.

The above will be superfluous for Aggregations for Settlement Days from the start of the I-SEM

3.13 Price Effecting Import

For Aggregations for Settlement days up to the last day of the SEM :

RA324 will not be implemented by SEMO prior to SEM go-live. This will impact on a small number of Trading sites with firm/non firm access calculations. Where Import data is Price-Effecting, it is needed by SEMO on a 7 day week, calendar day basis, and Eirgrid will be handling the provision of this data to the SEMO.

This means that, from SEM go-live, MRSO will not aggregate the Import for these sites and therefore will not include the Import for these sites in 591, 595 and 596 messages to Suppliers or 591 and 595 messages to TSO, and will not include the Import for these sites in 590 messages to SEMO.

The above will be superfluous for Aggregations for Settlement Days from the start of the I-SEM.

3.15 Market Messages

The Data Aggregation process will utilise a set of Market Messages, the 59x series, which will be generic across each aggregation. In addition there will be a Settlement Run Indicator in the body of each message to indicate the originating procedure. This Settlement Run Indicator will contain values as follows:-

10 = Indicative Aggregation
20 = Initial Aggregation
30 = Re-aggregation at M+4
40 = Re-aggregation at M+13
50= Ad Hoc Aggregation

3. 16 591 Market Message

The 591 Market Message was baselined at version 6.0 as part of the suite of changes to the Retail Market Design to satisfy new requirements of SEM implementation.
The following statement will be true for the composition of the 591 Market Message
Invalid Combinations should not be populated in the message, however if there are no MPRNs registered for a valid combination then a count of zero should be populated in the message
The implication of this statement is that where the DLF is LV:-

the count of MPRNs , Load profile and DLF will always be included for each of the Load Profiles 01-23 in the segment Additional Aggregation Information

And where the Count of MPRNs is zero, none of the lower level segments will be populated viz no Additional Aggregated Consumption, no Additional Aggregation Data segments for that Load Profile/DLF combination where the DLF is not LV:- there should be none of the segments : Additional Aggregation Information , Additional Aggregated Consumption, Additional Aggregation Data segments

3.17 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.

This means that Battery Storage units will not be sent 594 or 597 market messages from MRSO for the export data.

MRSO will also not aggregate the import for Battery Storage units and therefore will not include the import for these sites in 595 and 596 market messages to suppliers or 595 market message to TSO, and will not include the import for these sites in 590 market messages to SEMO.