PUBLIC

P376 'Utilising a Baselining Methodology to set Physical Notifications'

Business Requirements

John Lucas

4.0

9 March 2021

ELEXON

P376 BUSINESS REQUIREMENTS

Document History

Date	Version	Author	Reviewers	Description
4 May 2020	1.0	Damian Clough	John Lucas	
29 June 2020	2.0	Matthew Woolliscroft	Damian Clough	Amended from Settlement Period to Settlement Day granularity
30 October 2020	3.0	Damian Clough	John Lucas	Amended for updated solution and inclusion of Delivered Volumes
16 November 2020	3.1	Damian Clough John Lucas	John Lucas	Amended to clarify points raised by CGI, and introduce new requirement BR3.5 (to ensure that issues providing metered data are resolved in a timely fashion).
9 March 2021	3.2	John Lucas	Matthew Woolliscroft	Amended to address a point raised in the Assessment Procedure Consultation, and clarify the interaction of P376 with Asset Metering and Asset Differencing.

Approvals

Date	Version	Name	Role	Status

© ELEXON 2021

P376 BUSINESS REQUIREMENTS

CONTENTS

Document History 2

Approvals 2

INTRODUCTION 4

BSC CHANGE SUMMARY 4

BUSINESS REQUIREMENTS 6

BUSINESS REQUIREMENTS 15

1 Register MSID Pairs for baselining 15

2 Submit FPN for baselining 17

3 Obtain data to calculate baseline 18

4 Inactive MSID Pairs 19

5 Event days for Baselining Methodology 21

6 Approved Baseline Methodologies 22

7 Assuring Baselining Methodologies 24

8 Calculate Baselined Values 25

9 Calculate Non Delivery 27

10 Change of MSID Pair Ownership 28

GLOSSARY AND DEFINITIONS 29

© ELEXON 2021

P376 BUSINESS REQUIREMENTS

INTRODUCTION

1.1 Purpose

The BSC Change Business Requirements document is produced as part of the 'End to End BSC Change Process' during the BSC Change Assessment process.

The purpose of this document is to communicate the Business Requirements of BSC Change P376 to industry members and service providers. It enables an initial impact assessment to be carried out by a Service Provider.

In addition it describes the anticipated impact on BSCCo (people, processes and systems), the BSC, Code Subsidiary Documents, and other Configurable Items.

BSC CHANGE SUMMARY

1.2 Problem Statement

P376 'Utilising a Baselining Methodology to set Physical Notifications' was raised at the same time as P375 'Metering behind the Boundary Point'.

To take part in Balancing Services a Physical Notification (PN) must be provided to the NETSO. The PN is a Party's best estimate of flows for a Settlement Period before a Balancing Service is dispatched.

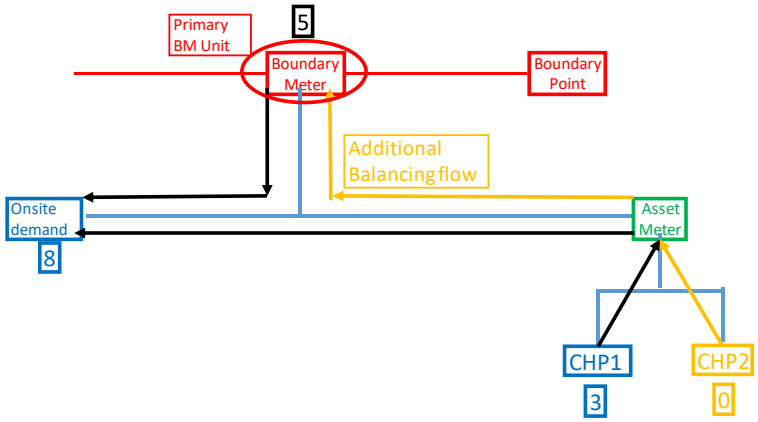
The PN at gate closure becomes a Final Physical Notification (FPN).

The FPN provided to the NETSO is the same value subsequently used to calculate Accepted Volumes (what volume is expected to be provided by the Balancing Service(s) QBS) as well as Expected Metered Volumes used in the Settlement of the Balancing Service (QME). Expected Volumes for a Balancing Mechanism Unit (BMU) when settling a Balancing Service is equal to the FPN plus Accepted Volumes. The formula within the BSC is as follows:

$$Period\ Expected\ Metered\ Volume\ (QME_{ij}) = FPN_{ij} + QBS_{ij})$$

If actual metered volumes do not equal expected volumes this may result in Imbalance or Non delivery charges, or may fully reward delivery when it has only been partially delivered.

As an example, in the diagram below, the FPN submitted to the NETSO will equal -5 at the Boundary Meter if perfectly forecasted and rather than +3 as shown at the asset meter, as actual metered volumes will be based on data received from the Boundary Meters. If an asset can offer +3 as a Balancing Service and this is accepted by the NETSO, Accepted Volumes will equal 3 and Expected Volumes will therefore equal -2. If the Balancing Service is fully delivered actual volumes at the Boundary Meter should also equal -2.



The accuracy of the FPN is therefore a crucial to Settlement.

© ELEXON 2021

Aggregators have stated the difficulty in setting accurate FPNs as a blocker in participating in the Balancing Mechanism, as Parties must forecast onsite Demand when submitting the FPN.

P375 'Metering behind the Boundary Point' seeks to allow metering volumes relating to the assets providing the Balancing Service to be used in Settlement whereas previously only Boundary Metering could be used. This will allow other demand on site to be isolated from those assets providing the Balancing Service thus aiding the setting of the FPN. In this case, the FPN above could equal 3 as actual metered volumes in Settlement will be received from the Asset Meter and not the Boundary Meter.

This P376 seeks to set the expected metered volumes used in Settlement (but not dispatch) on behalf of the Party. SVAA will forecast the expected flows through the nominated MSID/AMSID Pairs within the BMU where Parties choose to use the solution. In the example expected volumes will be 5. Previously, the expected metered volumes calculation used the same FPN value as is used for dispatch, meaning Parties would need to be able to forecast onsite demand. P376 proposes for these to be decoupled and therefore be different values. For example the Party (without the P375 solution) would be able to submit an FPN to the NETSO relating to the assets on site +3 (Operational Metering), and in Settlement the expected metered volumes can be calculated relating to the MSID Pairs (the Boundary Meters) within the BMU (-5). Without P376 the FPN submitted to NETSO has to correlate to the metering data received by ELEXON and used in Settlement due to the risk of Imbalance and Non Delivery Charges. As Asset metering may not isolate just generating assets, the P376 solution should not prevent baselining techniques being applied to asset metering.

The Party responsible for the Secondary Balancing Mechanism Unit (SBMU) or Additional Balancing Mechanism Unit (ABMU) (hereafter just 'BMU') will register with SVAA that they require the Expected Volumes calculation in Settlement to not utilise the FPN received from the NETSO. If they do not state this requirement, Settlement of the Balancing Service will continue under the process defined by P344. The P376 solution does not alter the requirement for Parties to submit accurate FPNs to the NETSO as detailed in the Grid Code. It will however allow more accurate FPNs to be submitted to the NETSO as Parties can submit FPNs relating to just the assets providing the Balancing Service and not the whole site.

P379 'Multiple Suppliers through Meter Splitting' is also related to P375 as will also use the concept of asset metering to separate volumes out from those Metered at the Boundary Point. However, as P376 looks at how 'typical' energy flows at the Boundary Meter can be predicted rather than how volumes can be separated, we do not foresee any material impacts between P376 and P379.

This document lists the Business Requirements for the solution(s) for P376.

For the purposes of these Business Requirements MSID Pairs can have the meaning given by P344 for Boundary Meters, or be Asset Meters introduced by P375, unless otherwise stated. This is for ease of use of these Business Requirements.

1.3 P376 Objective: Improve the accuracy of Expected Metered Volumes

P376 seeks to enable greater participation in the BM and TERRE by removing barriers to participation faced by aggregators, who may not have access to sufficient timely data to be able to provide an accurate FPN, and may therefore face imbalance or non-delivery charges due to the inaccuracy. P376 seeks to ensure that Balancing Service providers can be paid commensurate to the service they deliver by calculating a baseline on which to measure the volume of service provided, which will more accurately reflect actual usage at the time of delivery, as well as allowing Parties to submit more accurate FPNs to the NETSO.

© ELEXON 2021

1.4 P376 Scope

The P376 solution will be usable by Virtual Lead Parties (VLPs) (for sites in an SBMU) and Suppliers (for sites in an ABMU) only. VLPs or Suppliers who wish to use the solution will need to inform ELEXON of which MSID Pairs will have a baseline settlement volume calculated, which will also be used to calculate Delivered Volumes for those same MSID Pairs. VLPs and Suppliers who do not elect to use the solution, and other Parties will continue to provide FPNs to NGESO as is the current process. The use of the Baselining solution is a new process and will be optional

BUSINESS REQUIREMENTS

1.5 Current State (P344 as a baseline)

The following summary describes how the FPN is currently used within Dispatch and flows through into Settlement. These processes will not change. However what P376 aims to do is alter the value of the FPN within Settlement and decouple this FPN from the one currently used which is the FPN sent to NGESO. Therefore expected volumes and delivered volumes will subsequently change if the FPN value alters. The solution will allow the FPN to be altered for Additional BMU's as well. With Additional BMU's; assigning delivered volumes to adjust Suppliers volumes is not as detailed, as the Balancing Responsible Party and the Balancing Service Provider are the same Lead Party.

Registration

a) Become registered as a VLP

b) Create a SBMU (per GSP Group)

c) Allocate Boundary Point MSID Pairs to SBMU

Bidding & Despatch

d) Submit a PN for the SBMU

e) NGESO Dispatch SBMU using FPN

f) VLP sends SVAA indicating how delivered volumes should be allocated to each MSID Pair within SBMU

Supplier Volume Allocation

g) SVAA calculates total metered volume for Secondary BM Unit

h) SVAA received Delivered Volumes from VLPs

i) SVAA calculates Delivered Volumes per Secondary BM Unit and Supplier BM Unit

Settlement

j) SAA calculates Acceptances using NETSO BOAs and RRAs

k) Accepted Volumes (QBS) + FPN equals Expected Metered Volumes (QME)

l) Comparison between actual metered volumes and expected volumes equals delivered volumes

m) Dependant on the above figure VLP may be charged Imbalance and Non delivery charge

© ELEXON 2021

n) Delivered volumes declared by VLP (step h) are compared to total delivered volume (step k) and adjusted if necessary

o) Suppliers volumes are then adjusted using these delivered volumes to ensure Supplier are not exposed to Imbalance Charges from the Balancing Service

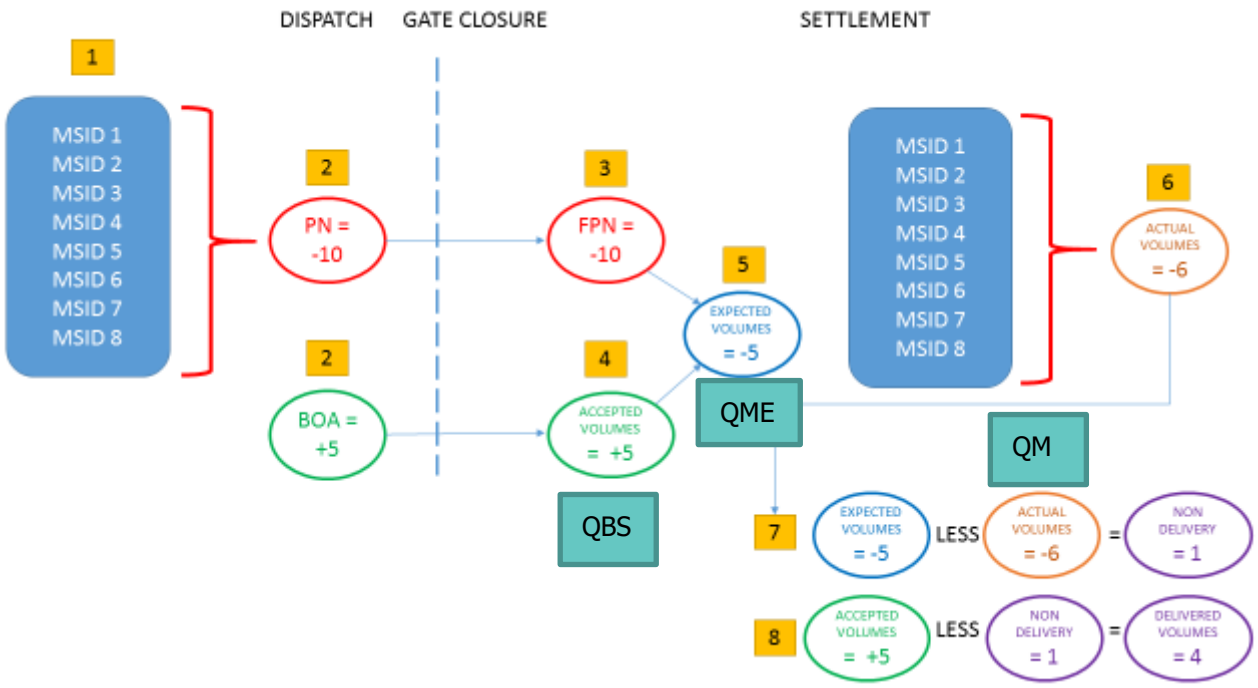
Change of VLP

p) VLP can register an existing MSID pair which is within another VLP's SBMU

q) The MSID pair automatically swaps but the incumbent VLP is informed of the swap and can challenge the swap

The diagram below illustrates the **current** process for dispatch and settlement of a balancing service and the key role the FPN plays throughout the process.

Current process before P376



1. The Party creates a SBMU/ABMU and registers MSIDs to that BMU
2. The Party if it wishes to offer a Balancing Service submits a PN to NGESO and a series of Bids and Offers. If accepted NGESO dispatches the BMU using the FPN as a base and the BOAs
3. The FPN becomes final at Gate Closure. SVAA receive the FPN from NGESO
4. Using the dispatch instruction SVAA calculates accepted volumes. Accepted Volumes are the delta change away from the FPN offered by the Balancing Service Provider. In the example above the BSP has offered to reduce demand by 5 units, and NGESO have accepted that offer For simplicity the same units are used within this diagram
5. FPN plus accepted volumes equals the expected volumes for the FPN. I.e. if you the Party has fully completed its offer than this is the metered volumes we would expect to see (includes the delta change)

© ELEXON 2021

6. SVAA calculates actual metered volumes for the relevant BMU, which is an aggregation of all MSID/AMSIDs metered volumes for that SBMU/ABMU
7. Expected Volumes less Actual Volumes equals Non Delivery volumes. Over delivery is capped at Accepted Volumes. As the FPN feeds into Expected Volumes this highlights the importance of the FPN being an accurate reflection of flows at the time of delivery
8. Accepted Volumes less Non Delivered Volumes equals Delivered Volumes. Delivered Volumes are used to adjust the Primary Supplier of the MSID or related MSID in the case of AMSID's. For ABMU's the adjustment is less complicated as all MSIDs belong to the same supplier.

© ELEXON 2021

1.6 Future state

Overriding principle

The FPN currently used in Settlement to calculate Expected Volumes for a BMU will be replaced by an expected volume calculated through a new process and therefore can be a different value from the FPN submitted to NETSO for dispatch if the Party notifies ELEXON that it wishes for this to happen.

The Baseline for an MSID Pair will be a forecast of expected usage based on historic metering data relating to those Meters. As with all forecasts the Baseline Methodology may not be 100% accurate. This is a risk which the Party will accept with the service. The Baselining service is optional. The various methodologies will be monitored, with the option to amend existing methodologies or introduce new ones via Change Proposals and as part of an annual review.

Solution

A BMU can contain a mix of sites whose Expected Volumes for Settlement when providing a Balancing Service is derived through a combination of a Baseline Expected Volume and a residual volume for the remaining MSID Pairs within the BMU not selected for baselining which is submitted to BSCCo by the Party, with Accepted Volumes (both Bid offer and Replacement Reserve) then applied to these volumes. Parties will still be required to send an accurate PN to NETSO for dispatch purposes - this is a separate process and will not be affected by P376.

The FPN sent to NETSO for dispatch is an FPN for all sites within that BMU. If the P376 solution is selected by a Party, they will be able to submit a FPN to NETSO which relates to the assets and not the boundary meter as is the current requirement.

Within a BMU there may be a mix of MSID Pairs which do not suit having their expected usage calculated via a baseline methodology, for example where the site is highly variable. The Party can therefore select which sites they want expected volumes to be calculated via a baseline methodology. These will be called MSID Baseline Values and when aggregated for a BMU will become **Baselined Expected Volumes.** For the remaining sites the Party must submit an expected volume in total for all those sites not being baselined (not individually). These will be called **Submitted Expected Volume**. The summation of Submitted Expected Volumes and calculated Baselined Expected Volumes will result in an overall expected volumes for that BMU which will be called the **Settlement Expected Volume**. The Settlement Expected Volumes will replace the current FPN received from the NETSO in the Settlement of the Balancing Service.

There may be multiple approved baseline methodologies available. The Party must choose the most appropriate methodology to use for each MSID Pair at the point of registration. It will be in the Party's best interest to choose the most suitable baseline to ensure it is accurately paid for the services it provides.

If an MSID Pair is selected to have its expected volumes derived from a Baselining methodology for the first time, SVAA will request sufficient historic demand data, from Half Hourly Data Collectors (HHDCs) for AMSID Pairs or standing data from Half Hourly Data Aggregators (HHDAs) for MSID Pairs to allow this to happen. The data requirement will be specified by each methodology, and may include things such as:

- Historical demand data from the HHDA/HHDC; and
- Notification of where a balancing service has been provided (event days) from the Party.

If there is insufficient demand data to create a Baselined Expected Volume under a baseline methodology (for example the MSID may be a newly registered Asset Metering System), the MSID Pair will be excluded from Settlement and the Party notified of this. This allows the Party to choose the next most appropriate action. It may be a temporary problem with providing data to Settlement, which will be fixed in the next Settlement Run. Alternatively the Party can then opt to allocate the MSID Pair to its BMU and include it in its Submitted Expected Volumes figure or make that MSID Pair inactive within the BMU until sufficient demand data becomes available.

© ELEXON 2021

For Inactive MSID Pairs SVAA will instruct the HHDA to start sending demand data and notify the Party when a Baselined Expected Volumes can be created but whilst inactive, metered volumes for those MSID Pairs will not contribute to actual metered volumes for the BMU. A Party may make to set a site to Inactive when a site is not available to provide balancing services, but does not want to deregister the MSID Pair. If the MSID wasn't set to inactive, then the Metered volumes for that MSID Pair would contribute to the Party's Actual Metered Volumes, and so would need to be able to forecast the volumes to ensure it was accurately paid for Balancing Services provided by other sites.

The Baselined MSID Pair will also be used to calculate Delivered Volumes for those MSID Pairs registered as Baselined MSID Pairs within a SBMU. This will replace the current process where the VLP sends to SVAA what it believes has been delivered by each Baselined MSID Pair (as well as all other MSID Pairs within the SBMU which will not change).

Under the P376 solution, the FPN used for dispatch (if the Party so wishes) will be decoupled from the value used in Settlement processes. For this, we will use the following conventions.

- The calculated value of expected usage for each MSID Pair will be known as the **MSID Baseline Value**.
- The sum of the MSID Baseline values in a BMU will be known as the **Baselined Expected Volume**.
- Where a Party has MSID pairs within its BMU whose expected volumes are not calculated via a baseline methodology the Party will include the MSID Pair in its **Submitted Expected Volume**.
- The sum of all individual Baselined Expected Volume and the Submitted Expected Volume shall be known as the **Settlement Expected Volume**.
- A BMU consisting of MSID Pairs that use the baselining solution implemented by P376 will be known as a **Baselined BMU**.

© ELEXON 2021

P376 BUSINESS REQUIREMENTS

P376 introduces the concept that the FPN sent to NETSO for dispatch purposes, and the expected volumes used within settlement can be different, if the Lead Party indicates to SVAA that they want them to be different values. This is their commercial decision to do so. **Please note that all Suppliers can use the P376 process for the Settlement of Balancing Services, not just VLPs**

Registration

a) Become registered as a Party.

b) Create a SBMU (VLP only) or ABMU (Supplier) per GSP Zone.

c) Allocate Boundary Point MSID Pairs to SBMU or ABMU.

d) Register MSID Pair for Baselining to create a Baselined Expected Volume

e) SVAA informs CRA that BMU is baselined

f) Party Registers event days or makes MSID Pairs dormant

Bidding & Despatch.

g) Submit a PN to NETSO for the BMU

h) NGESO Dispatch BMU using FPN.

i) VLP sends SVAA allocation matrix showing how delivered volumes should be allocated to each MSID Pair within SBMU for those MSID Pairs which are not Baselined MSID Pairs.

j) Party registers a Submitted Expected Volume before Gate Closure (1 hour before Settlement Period starts) for those MSID Pairs within its Baselined BMU who have not being registered as requiring a Baseline Expected Volume.

Supplier Volume Allocation

k) SVAA calculates total metered volume for BMU.

l) SVAA calculates Delivered Volumes for Baselined MSID Pairs by comparing MSID Baseline Values to actual MSID Metered Volumes.

Settlement

m) SAA calculate accepted volumes using FPN, NETSO BOAs and RRAs.

n) SVAA receives demand data from HHDA/DC's and creates Baseline Expected Volumes per MSID Pair for those MSID Pairs which have registered this requirement

o) Accepted Volumes + newly calculated Settlement Expected Volumes (Summation of Baseline Expected Volume + Submitted Expected Volume, sent by the Party) (instead of FPN) equals expected volumes for Parties using this P376 solution.

p) Comparison between actual metered volumes and expected volumes equals delivered volumes.

q) Dependant on the above figure the Party may be charged Imbalance and Non delivery charge.

r) Delivered volumes declared by VLP (step i) for MSID Pairs which are not Baselined and Delivered Volumes for Baselined MSID pairs calculated by SVAA are compared to total delivered volume (step j) and adjusted if necessary.

© ELEXON 2021

s) Suppliers volumes are then adjusted using these delivered volumes to ensure Supplier do not profit/loss from the Balancing Service.

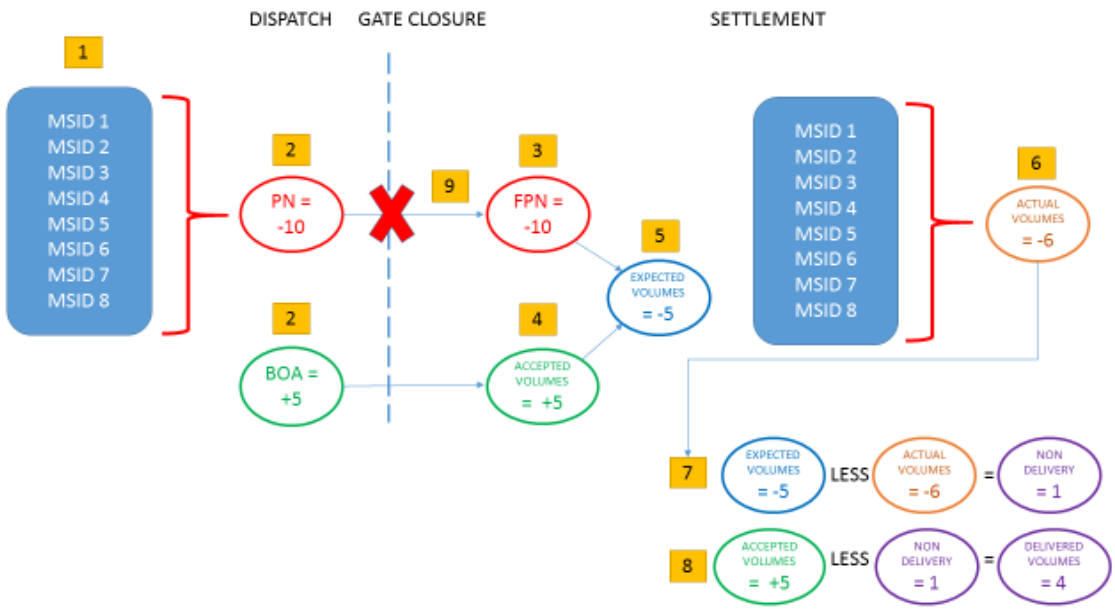
Change of VLP

t) When a MSID pair is acquired by a new VLP, its status will revert to 'included in Submitted Expected Volume' as default.

u) The new Party responsible for the MSID pair will be required to re-register the MSID Pair for a different status from that of the default i.e. baselining or inactive

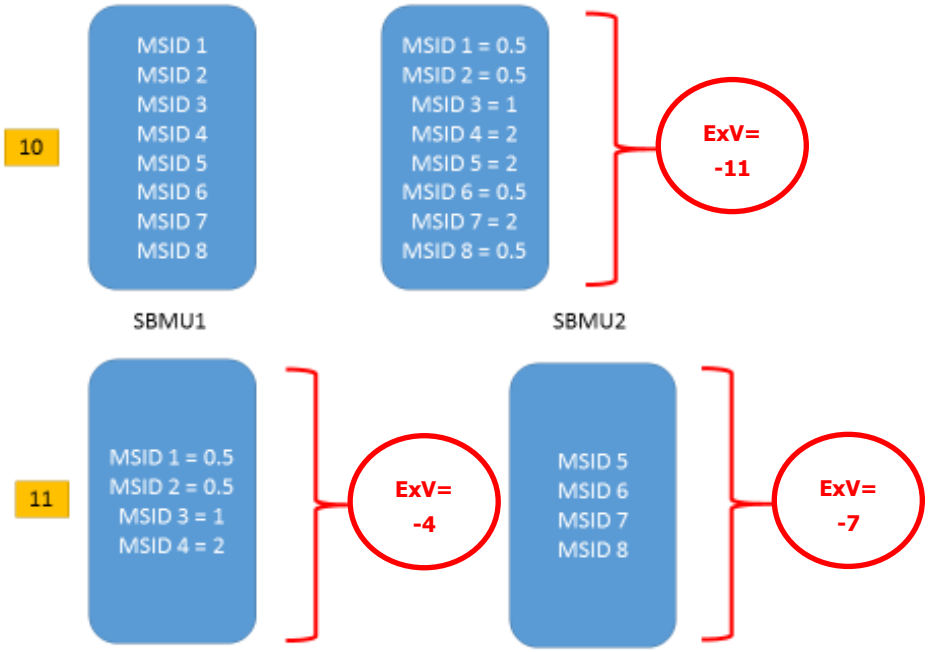
The above process details how the FPN is used within Dispatch and flows through into Settlement. The above processes will not change. However what P376 aims to do is create a new value of expected volumes which will replace the FPN. Therefore expected volumes and delivered volumes will subsequently change if the expected volumes value alters.

9. P376 introduces the concept that the FPN used to dispatch the asset will be replaced with a newly calculated expected volumes (ExV) used in Settlement if the Party notifies SVAA that they want these two values to be different.



Therefore how can expected volumes (ExV) in settlement be created when not using the FPN?

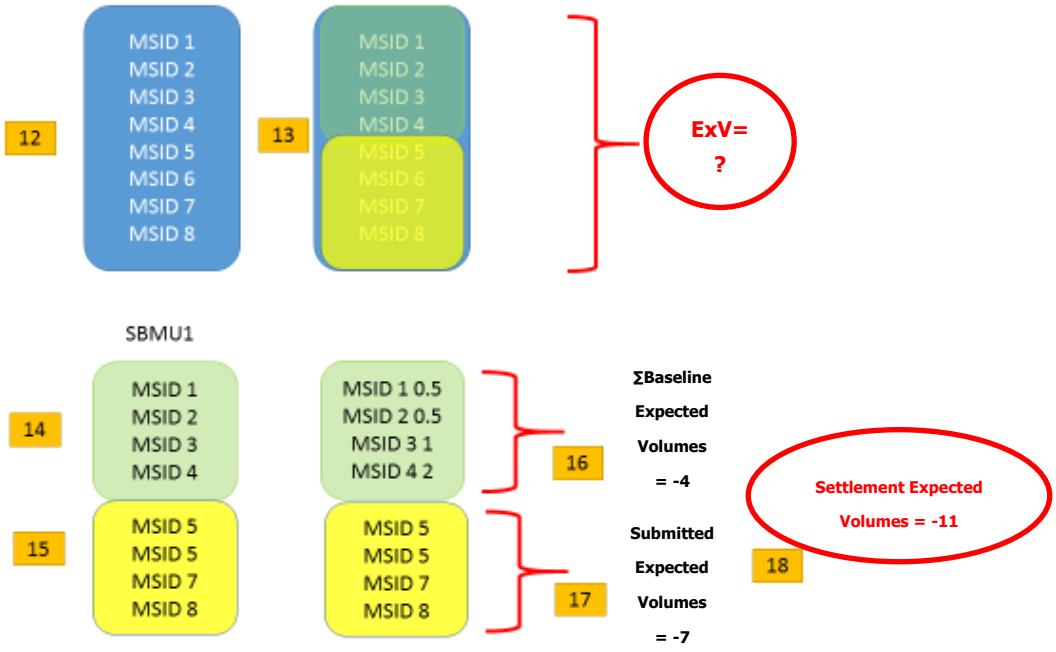
© ELEXON 2021



10. The Workgroup examined the simpler solution of the Party registering that the FPN for a BMU be replaced with expected volumes created using a baseline methodology. All MSID Pairs within a BMU will have an MSID Baseline value created via the same baseline methodology. These individual MSID Baseline volumes will be summated to create a Baseline Expected Volume for the whole BMU.
11. This solution would require all MSID Pairs within the BMU to be treated the same. It was noted by the Workgroup that a Party's portfolio may be made up of MSID Pairs which suit a baseline methodology, but may also contain MSID Pairs where the Party would be better placed to calculate flows and submit an expected volumes for these MSID Pairs. For example they had installed asset metering or the site was highly variable. To do this would mean splitting their portfolio up and creating separate BMUs, which may create problems delivering the accepted volumes and being dispatched in the first place.

Create concept of baseline and submitted **expected volumes**

© ELEXON 2021



The Workgroup considered how the Expected Volumes could be created for a BMU which didn't involve the creation of separate BMUs. If a Party had to split up its portfolio so that it had separate BMUs for MSID Pairs that would use the baselining solution and a BMU for MSID Pairs that would have submitted expected volumes, then this would increase burden for the Party and may reduce the available balancing volume in the BMU.

Parties that want to use the P376 solution will register the BMU to have a newly calculated Settlement Expected Volumes which will replace the value of the FPN submitted to NETSO in Settlement. If the Party does not register these requirements then Expected Volumes for the BMU will utilise the FPN submitted to NETSO for dispatch. I.e. status quo.

12. When registering MSID Pairs to the BMU, the Party will register if they wish the expected volumes for that individual site to be created via a baselined methodology process or for the site to be part of a Party Submitted Expected Volume.
13. For the purposes of calculating the Settlement Expected Volumes the BMU is 'split' up within SVAA into sites which will have a MSID Baseline Values and sites where the Party will submit a Submitted Expected Volumes. However they will all still belong to the same BMU. In the example above MSID Pairs 1 to 4 have been nominated by the Party as having their expected volumes calculated via a baselined methodology. **Baseline Expected Volume.**
14. MSID 5 to 8 are better suited to having their expected volumes nominated by the Party themselves. **Submitted Expected Volume**.
15. The baseline methodology has calculated individual site expected volumes (**MSID Baseline Values**) which are summated into a **Baseline Expected Volume** of -4.
16. The Party submits a **Submitted Expected Volume** for the remaining sites in total (not per site). The Party thinks that in aggregation those sites will have an expected volume of -7 in total
17. The **Baselined Expected Volume** and **Submitted Expected Volume** are added together to create a **Settlement Expected Volumes.**

© ELEXON 2021

BUSINESS REQUIREMENTS

For the purposes of these Business Requirements MSID Pairs can have the meaning given by P344 for Boundary Meters, or be Asset Meters introduced by P375, unless otherwise stated. This is for ease of use of these Business Requirements.

1 Register of BMU and MSID Pairs for baselining

When calculating expected volumes used in the Settlement of Balancing Services the same FPN the Party sends to NETSO to dispatch the asset is utilised. If a Party wishes to decouple the calculation of expected volumes used in Settlement then it must notify CRA of its intentions to do so. The use of this service is optional.

The Party has registered with CRA that the BMU will be a Baselined BMU. The Settlement Expected Volume now needs to be created. All MSID Pairs within a Baselined BMU could have their own individual baseline volume created which when summated equals the Settlement Expected Volume. However not all sites may be suitable to have their expected volume created via a baseline methodology for example they may be highly variable. To avoid having to split a portfolio into different BMUs. it is must be possible for a BMU to have a combination of sites whose expected volume is derived from Baseline or where the expected volume is submitted by the Party, rather than all sites within a BMU having their expected volume derived from a baseline methodology. It is therefore necessary to set up a process where SVAA is notified of the requirement to create a Settlement Expected Volume for an MSID Pair.

BR1 REGISTRATION OF BMU AND MSID PAIRS FOR BASELINING	
The Party will inform CRA that a BM Unit is baselined and register those MSID Pairs in a Baselined BM Unit it wishes to use the baselining solution. Where these Business Requirements refer to MSID Pair this can mean either MSID Pair or AMSID Pair (introduced by P375).	
BR1.1	If a Party wishes for Settlement Expected Volumes to replace the FPN in Settlement they will notify CRA of this via the BSP15 Registration process. A new Flag will be created called Settlement Expected Volumes (SEV). True/False. If the Flag is set to True the BM Unit will be known as a **Baselined BM Unit.**
BR1.2	For existing SBMU's and ABMU's, SEV will be set to False which can be subsequently changed by BR1.1.
BR1.3	If a Party requires the expected volumes for a MSID Pair to be created via a Baseline Methodology then it must register the BM Unit as a Baselined BM Unit first and then register each MSID Pair for Baselining. This will require a new registration process under the existing SVAA Metering System Balancing Service Register (BSCP602). The SVAA Balancing Service Register is updated to reflect that the MSID Pair has been registered for baselining.

© ELEXON 2021

BR1.4	If a Baseline cannot be created for a Baselined MSID Pair, the SVAA will treat the MSID Pair as if it had delivered zero volume (by setting its MSID Baseline Value to equal the metered consumption) and the Party notified.
BR1.5	Baseline Volumes will be created using the selected Baseline Methodology, as follows: • The **MSID Baseline Value** for each MSID Pair; • The **AMSID Baseline Value** for each AMSID Pair; and • The **Net Differencing Baseline Value** for each set of MSID Pairs and AMSID Pairs comprising an Asset Differencing arrangement. These Baseline Values will be summed to BMU level and will be called **Baselined Expected Volumes**.
BR1.6	The **Baselined Expected Volume** for the site used in Settlement will be calculated based on the registration details which were registered for that Settlement Day by midnight (24:00) on the previous Settlement Day. For example if a MSID is selected for Baselining at this time, this cannot then be changed. This is to prevent the Party unregistering/registering the site for baselining or choosing a different baseline methodology if they don't like the value being created for a particular Settlement Day. The baseline registration details can be changed at Settlement Day granularity. i.e. the same registration details will be used for a whole Settlement Day.
BR1.7	The solution must enable a Party to register more than one MSID Pair for the baselining solution at a time. In future aggregators may wish to register multiple MSID Pairs often of very small sizes. They would not want to have to input each one separately.
BR1.8	For all other MSID Pairs within a Baselined BM Unit not registered for the Baselining solution, the Party will be required to take those into account when submitting an expected volume. This will be called the **Submitted Expected Volume.** When a MSID Pair is registered with the Indicator "B" all other MSID Pairs within the SBMU will automatically have the indicator "S" applied to it if they do not have the Indicator "B" registered by the Party. This informs the registrant that they must include a forecast of the metered volumes for the relevant meter in their **Submitted Expected Volume** If the MSID Pair is a Boundary Point then the submitted expected volume will be for related to the MSID Pair i.e. be for the whole site If the MSID Pair is a Boundary Point selected for differencing as part of P375 then this will be for the whole site less metered volumes for the AMSID Pairs If the MSID Pair is an AMSID Pair then this will be for the Asset Meters within the registered Asset Metering System

© ELEXON 2021

2 Submit Expected Volumes for baselining

Certain sites may not be suitable for a Baselining Methodology if they are highly variable or the Party may feel that it can better forecast flows than the Baselining Methodology. For these sites the Party can submit an Expected Volume to SVAA which will take into account all remaining MSID Pairs in a Baselined BM Unit not registered for a Baselining Methodology.

BR2 SUBMITTING AN EXPECTED VOLUME	
For all those MSID Pairs within a Baselined BM Unit which have not being registered for a Baselining Methodology the Party must register a **Submitted Expected Volume** with SVAA.	
BR2.1	No later than Gate Closure for a Settlement Period, The Party will be required to submit a single value per BM Unit to SVAA which will be called the **Submitted Expected Volumes.** This single number should take into account all remaining MSID Pairs allocated to a BM Unit which is now a Baselined BM Unit not registered for a Baselining Methodology as per BR1.
BR2.2	For the avoidance of doubt the Submitted Expected Volumes by Parties will not be adjusted by SVAA for losses. This mirrors the existing process for FPNs received from the NETSO which are also not loss adjusted. Therefore Lead Parties should take into account losses in their own calculations when processing Submitted Expected Volumes.. P344 and P375 will ensure disaggregated data per MSID and AMSID will be available to SVAA.
BR2.3	There is no requirement to submit individual expected volumes for each MSID Pair. Parties will submit one figure which will reflect their own forecast of expected metered volumes for all MSID Pairs with the Indicator "S".
BR2.4	The value used in Settlement Calculations of the Balancing Service will be the **Settlement Expected Volume**, which will be equal to the sum of the **Submitted Expected Volume** and the **Baseline Expected Volume** (summation of the **MSID Baseline values, AMSID Baseline Values and Net Differencing Baseline Values)**.
BR2.5	Parties can register a **Default Submitted Expected Volume** for each Settlement Period. A Default Submitted Expected Volume must be registered by midnight (24:00) on the Settlement Day before it becomes effective.
BR2.6	If the Party does not register a Submitted Expected Volumes by Gate Closure then the default Submitted Expected Volumes will be used if one has been registered. This will be similar to 'evergreen ECVNs'.
BR2.7	If a Default Submitted Expected Volume and a Submitted Expected Volume has not being registered before Gate Closure for a particular Settlement Period then the Settlement Expected Volume for that settlement period will be NULL. This will signify that a submission was expected, but not received.

© ELEXON 2021

3 Obtain data to calculate baseline

When an MSID Pair is allocated to a SBMU, SVAA will start to receive disaggregated data for that MSID Pair from the HHDA. If the MSID Pair is registered with SVAA for baselining, then SVAA will require historic data for a period before when the MSID was allocated. SVAA will therefore request historic demand data from the HHDA's. For AMSID Pairs SVAA will already have access to all the available demand data sent in from HHDC's. For brand new sites/AMSID Pairs there will be insufficient data to create an MSID Baseline value as no demand data will exist. SVAA currently receive aggregated data for Boundary MSIDs.

BR3: REQUESTING DATA TO CALCULATE BASELINE	
For new sites or newly registered Asset Meters there may be insufficient data to create an MSID Baseline value (dependent on the Baseline Methodology being used).	
BR3.1	When an MSID Pair (excluding AMSID Pairs) is registered to have an MSID Baseline Value, SVAA will instruct the HHDA to send a maximum of 60 days' worth of historic data (or as much as is available if less) in one file.
BR3.2	Where demand data does not exist, the HHDA will inform SVAA that this is the case.
BR3.3	SVAA will then notify the Party if demand data is not available to calculate a baseline value.
BR3.4	If insufficient data is available to calculate a Baselined Volume, SVAA will treat the MSID Pair as if it had delivered zero volume (by setting its MSID Baseline Value to equal the metered consumption) and inform the Party. The Party can then choose the next course of action (e.g. whether to wait for data to become available from the HHDA, or whether to make the MSID Pair Inactive).
BR3.5	In order to ensure that issues in providing required metered data can be resolved in a timely fashion, a new automated process is required for SVAA to reconcile confirmations and rejections from HHDAs (D0355 and D0356 data flows) with the relevant request (D0354 data flow). The process will allow an operator (via the Operator Portal) to immediately visualise the MSIDs for which: • A confirmation has been received; • A rejection has been received; or • No confirmation or rejection has been received. This requirement applies to all requests for Metered Data i.e. requests for Baselined MSID Pairs (for which historical data is required, as per BR3.1) and requests for non-Baselined MSID Pair (as per the existing processes introduced for P344).

© ELEXON 2021

4 Inactive MSID Pairs

When an MSID Pair is registered within a BM Unit then metered volumes will automatically start contributing towards the Period Metered Volumes. For this reason the Party must take into account this MSID Pair in the Submitted Expected Volume or register that Pair for an MSID Baseline Value. However there may be insufficient demand data to calculate an MSID Baseline Value and the Party may not be confident in their own ability to be able to forecast expected usage (within the Submitted Expected Volume). Inaccurate expected volumes when compared to actual metered data may create Non Delivery Charges. The Party can register a MSID pair to be inactive.

BR4: INACTIVE MSID PAIRS	
A Virtual Lead Party can make a MSID Pair inactive. This BR applies only to MSID Pairs registered in an SMBU. E.g. not an ABMU.	
BR4.1	The Virtual Lead Party can register with SVAA for a MSID Pair to be made **inactive** using BSCP602 detailing a start and end date. The MSID Pair does not need to be new MSID Pair. For the avoidance of doubt any MSID Pair or AMSID Pair within a SBMU can be made inactive. It is not restricted to Baselined MSID Pairs
BR4.2	SVAA will exclude Inactive MSID Pairs from Settlement of the Secondary BM Unit to which they are assigned, by: • Not calculating a value of Secondary BM Unit Metered Consumption ($VBMMC_{i2aNLKji}$) for the MSIDs in the MSID Pair. As a result these MSIDs will not be included in the Secondary BM Unit Demand Volume ($VBMUDV_{i2j}$); • Not including a Delivered Volume for the MSID Pair in Settlement. For Baselined MSID Pairs this will be achieved by not calculating a Delivered Volume; for non-Baselined MSID Pairs by not accepting a Delivered Volume from the Virtual Lead Party. • Not including the MSID Pair in the Baselined Expected Volume (BEV_{ij}). This could be achieved by not calculating the MSID Baseline Value (MBV_{KiLj}), or by not including it in the Baselined Expected Volume. For Submitted Expected Volumes the VLP will need to remove the Inactive MSID from their own calculations if the MSID is not a Baselined MSID Pair.
BR4.3	SVAA will continue to collect actual metered volumes from the HHDA, or HHDC, so as to allow a Baseline Expected Volume to be calculated immediately when a site is made active by the Party.
BR4.4	Inactive MSID Pairs cannot have Delivered Volumes assigned to them. SVAA will check that this happens (BSCP602), Where Delivered Volumes are received against inactive MSID Pairs, they will not be used in any calculations.
BR4.5	The MSID Pairs within an ABMU cannot be made inactive as metered volumes are used for Imbalance calculations for all Settlement periods. Only MSID Pairs in an SMBU (i.e. for Balancing services) can be made **Inactive**.
BR4.6	The Party responsible for the BMU will be informed when an MSID Baseline Value can be created for the Inactive MSID Pair (i.e. Baseline available Y/N). It is up to the Party to register

© ELEXON 2021

	with SVAA if they wish to change the status of an MSID Pair. This will not be an automatic process
BR4.7	A Party will be able to see the status for all MSID Pairs within its Baselined BM Unit.
BR4.8	Virtual Lead Parties can change the status of a MSID pair to and from inactive at any time. The change will be time dated. Settlement of the Balancing Service will be based on the status of the MSID Pair as at midnight (24:00) on the previous Settlement Day.
BR4.9	Virtual Lead Parties will be able to make multiple MSID pairs inactive at the same time, including through a file upload. This will allow Parties to align the sites not inactive within the BM Unit with those MSID sites actually providing the delivery of the Balancing Service
BR4.10	For the avoidance of doubt a Virtual Lead Party can make an Inactive MSID Pair, active at any time, and change its status from a Baselined MSID Pair to a MSID Pair (subject to BR4.8).

© ELEXON 2021

5 Event days for Baselining Methodology

The Baseline Methodology creates a baseline based on normal usage and predicts what the MSID Pair should be doing. Therefore, it needs to discount days where the site is doing something not normal, such as providing a Balancing Service. As providing a Balancing Service can affect the site outside of the Settlement Period providing the Balancing Service the whole day is discounted from the calculation of the baseline.

BR5: CREATE EVENT DAYS	
Where an MSID Pair has delivered a Balancing Service (or exhibited abnormal behaviour), that MSID Pair may have an 'event day' created. Data associated with event days will not be used in baseline calculations where non event day data is available.	
BR5.1	Parties will be responsible for notifying SVAA of 'event days', when the behaviour of a site if not deemed normal. This will be done at MSID pair level.
BR5.2	When submitting an event day, the Party will be required to choose an option from a predefined list of event day types. To begin with this list will be restricted to two options. • Balancing Service Other
BR5.3	A Party must notify SVAA of 'event days' or a change to Event days that are not more than 30 days in the past, after which the Event days are locked.
BR5.4	A Party can submit an Event day before the event.
BR5.5	Where an event day is created, data relating to all Settlement Periods on that day will be considered as associated with an event day. This may affect how a baseline methodology treats such data.
BR5.6	SVAA can cancel an Event Day at any time (i.e. not just within 30 days) if it is found it was created in error.

© ELEXON 2021

6 Approved Baseline Methodologies

MSID Pairs that are registered for MSID Baseline Values will have their Expected Volumes calculated using the Party's chosen approved methodology. It will be the Party's responsibility to choose which Approved Methodology it wishes to use for each MSID Pair. Approved Methodologies can be added/removed through the CP process.

BR6: Which Methodology to use	
Allow different baseline methodologies to be used. Future proofs for future technologies.	
BR6.1	A Party must be able to select a baseline methodology from an approved list of baseline methodologies at the time of registering the site for baselining. This will be per MSID Pair.
BR6.2	A Party must be able to change the selected baseline methodology for a site under the same timescales as for registering for using the baselining solution in BR1
Details of any approved Baseline Methodologies will be contained in a new BSCP under Panel ownership. The Baseline Methodologies will be assessed to ensure that gaming is not taking place and the methodologies are reliable and take into account new changes such as price changes, new balancing services such as DNO flexibility.	
BR6.3	To support any change to the approved methodologies, when requested on an ad hoc basic ELEXON will produce analysis demonstrating the accuracy of requested baseline methodologies for consideration by the Panel.
BR6.4	The Annual report into the ongoing suitability of baseline methodologies will be able to make recommendations to amend or remove any approved baseline methodology. SVAA will produce analysis to inform the annual report on baseline suitability. Where recommendations are made, ELEXON will raise a Change Proposal to carry forward these recommendations.
BR6.5	The BSC Panel will consider the annual report into the ongoing suitability of baseline methodologies and determine whether changes are required.

Example Baseline Methodology

The following is an example of a baseline methodology that could be used to calculate Settlement Expected Volume. The approved Baseline Methodologies will be contained in a separate Code Subsidiary Document. This methodology would only be applicable to normal week days. A different methodology would be better suited to weekend days.

10 of 10:

The methodology will consider a data pool from the previous 45 days. As new data is added each day, the oldest data will fall outside the pool range.

From the data pool the methodology will select the 10 most recent acceptable days according to the selection criteria.

The methodology will only select data that is from a working day (i.e. non weekend and non public holiday).

The methodology will only select data from days that are not considered 'event days'.

Where more than 5, but less than 10 acceptable days can be found, the methodology will consider event days with the greatest Metered volume to make the 10 required days.

The methodology will average the selected days at Settlement Period level to calculate the baseline.

© ELEXON 2021

The calculated values will be adjusted using a scaling factor calculated using Metered data from 4-1 hours before a dispatch. Each Settlement Period in this window will be compared from eth predicted values using the above process. The six differences will be averaged to provide a scaling factor.

The baseline calculated during the dispatch window will have this scaling factor applied to determine the final MSID Baseline Value for the MSID Pair in a particular Settlement Period.

© ELEXON 2021

7 Assuring Baselining Methodologies

The P376 solution requires assurance methods for two purposes:

- Firstly to confirm that the values created by baseline methodologies are truly representative of the energy flow at a boundary meter would be in 'normal' circumstances.
- Secondly to confirm that the additional value submitted by parties as their Submitted Expected Value is truly reflective of what the energy flows at the boundary meter for these sites would be under 'normal circumstances.

BR7: Assurance techniques	
To address the above assurance requirements, we will create two Material Error Monitoring Reports.	
BR7.1	On an annual basis, BSCCo will report on the accuracy of baselined values. It will compare the baseline value created in every Settlement Period where a balancing Service hasn't been provided (i.e. the site has operated under normal circumstances) and compare this to the actual metered volume for the site. Where the baseline calculation is working effectively, we would expect these two values to be broadly the same; we are proposing ±10%.
BR7.2	PAB will undertake a Technical Assurance of Performance Assurance Parties (TAPAP) check 6 months after implementation to assess whether Event days submitted were being submitted in line with the BSC i.e. they were genuine abnormal days. After the assessment of risk a more formal annual auditing requirement may be put in place.
BR7.3	FPNs submitted under the Grid Code are required by the Grid Code to be accurate reflections of what the Party expects to happen and created in line with 'good industry practice'. Since our party submissions will not fall under the remit of the Grid Code, we need to define our own requirements and assurance on an annual basis. As the Parties submission will be done at BMU level (rather than MSID), we will also need to use the baseline values in order to draw an appropriate comparison. We are proposing that the BMU Expected Volume (made of the Baseline Volume and the Submitted Volume) should be within 20% of the actual Metered Volume in all Settlement Periods that are not flagged as event days.

© ELEXON 2021

8 Calculate Baselined Values & Delivered Volumes

The SVAA will calculate MSID Baseline Values for all MSID Pairs that are in a Baselined BM Unit and registered for a baseline methodology, and aggregate to BMU level to calculate the 'Baseline Expected Volume'. This will then be added to the Submitted Expected Volume to create the Settlement Expected Volume. Where Baseline Volumes are calculated for a MSID, SVAA will also calculate Delivered Volumes for those MSIDs.

BR8 SVAA calculations	
SVAA will create a Settlement Expected Volume which will then be subsequently used by SAA in the Settlement of a Balancing Service	
BR8.1	SVAA will continuously create MSID Baseline Values, AMSID Baseline Values and Net Differencing Baseline Values for all Settlement Periods and store these expected volumes for a certain amount of time to allow for potential future assurance. The period of storage will be in line with current metering data and the disputes process.
BR8.2	SVAA will calculate Baselined MSID Values and Baselined AMSID Values, and then apply losses. The Baselined MSID Values calculated by the Baseline Methodology will be based on disaggregated Metered Volumes received from the HHDA's therefore will not have been adjusted for losses on the Distribution System. To create alignment with Submitted Expected Volumes as described in BR2.2, Baselined MSID volumes will need to be loss adjusted, prior to calculation of the Baseline Expected Volume (BR8.5). The adjustment of Baselined MSID Volumes will mirror the same process (and loss figures) used by SVAA to currently adjust disaggregated Metered Volumes received from the HHDA's introduced as part of P344, and is described in the P376 legal text as follows: $MBL_{KiLj} = (LLF_{Lj} - 1) * MBV_{KiLj}$ $AMBL_{KiLj} = (LLF_{Lj} - 1) * AMBV_{KiLj}$ $BEV_{ij} = \sum_K (MBV_{KiLj} + MBL_{KiLj}) + \sum_K^{NonDiff} (AMBV_{KiLj} + AMBL_{KiLj}) - \sum_K^{Diff} (AMBV_{KiLj} + AMBL_{KiLj})$
BR8.3	The MSID Baseline Value, AMSID Baseline Value and Net Differencing Baseline Value can alter as new demand data, event days are received by SVAA. An Audit trail will be needed as these values will be used in Settlement and potential future assurance
BR8.4	For all Baselined BM Units, SVAA will provide calculated Settlement Expected Volumes per BM Unit per Settlement Period, to the SAA. SVAA will inform SAA if no Settlement Expected Volumes exists (revert to Status Quo).
BR8.5	SVAA will aggregate calculated MSID Baseline Values for MSID Pairs with a 'baseline' status to BM Unit level to calculate the Baseline Expected Volume for every Settlement Period. SVAA will require actual metered data to undertake this task so Baselined Values will not be available until after the relevant metering data is received from HHDC's/HHDA's and processed in line with the Settlement calendar.

© ELEXON 2021

BR8.5A	For any Settlement Period in which a baselined BM Unit has a Bid Offer Acceptance or Replacement Reserve Activation, SVAA will calculate the MSID Pair Delivered Volume for all MSID Pairs with a 'baseline' status (excluding Inactive MSID Pairs) in that BM Unit. The MSID Pair Delivered Volume will be calculated as the metered volume minus the baseline volume (aggregated over the Import and Export MSIDs, with Import treated as negative as per the existing sign conventions for Delivered Volumes). For the avoidance of doubt, the Baseline Expected Values used to calculate Delivered Volumes are the raw values, prior to application of Line Loss Factors (because Delivered Volumes will subsequently have Line Loss Factors applied, by existing P344 SVAA functionality introduced for Modification P344). VLPs will not be required to submit MSID Pair Delivered Volumes for MSID Pairs with a 'baseline' status (and any such MSID Pair Delivered Volume that is submitted will not be used in Settlement).
8.5B	For the avoidance of doubt, Delivered Volumes will continue to be processed in line with the existing arrangements introduced by Modification P344: • SVAA will allocate the MSID Pair Delivered Volume to the Import MSID and Export MSID, to create the Metering System Delivered Volume ($QVMD_{Kj}$) • SVAA will allocate the $QVMD_{Kj}$ values to a Secondary BM Unit and Supplier BM Unit, to create the Secondary BM Unit Delivered Volume ($QVBMD_{i2NLKji}$) • SVAA will apply Line Loss Factors and GSP Group Correction Factors to the $QVBMD_{i2NLKji}$ values and aggregate to BM Unit level to create the Secondary BM Unit Supplier Delivered Volume ($VBMUSDV_{i2ji}$) • SVAA will send the $VBMUSDV_{i2ji}$ values to the SAA, who will (if necessary) adjust them *pro rata*, so that the total Delivered Volumes for the Secondary BM Unit match that calculated by SAA (Period Expected Volumes less Actual Metered Volumes) All of these existing processes are unchanged, except that they now apply to both: • Delivered Volumes calculated by SVAA for Baselined MSID Pairs (BR8.5A); and • Delivered Volumes submitted by VLPs (using the existing P344 process) for MSID Pairs not registered as Baselined MSID Pairs.
BR8.6	Parties will submit their Submitted Expected Volume to cover all MSID Pairs not included in the Baseline Expected Volume before Gate Closure. This will be at BM Unit level per Settlement period.
BR8.7	SVAA will add the Baseline Expected Volume and the Submitted Expected Volume to determine the Settlement Expected Volume per BM Unit per Settlement Period and then send to SAA
BR8.8	For a Baselined BM Unit, SAA will use the calculated Settlement Expected Volume in place of the FPN currently used in the Settlement processes. If for a particular Settlement period SVAA has not being able to calculate a Settlement Expected Volume (i.e. Party has not provided a default Submitted Expected Volume) then SAA will use the FPN.

© ELEXON 2021

9 Calculate Non Delivery

When calculating Non-Delivery Charges, SAA will replace the FPN received from the NETSO with the Settlement FPN calculated by SVAA using metered data. This is for Baselined BM Units only.

BR9 SAA Calculations	
SAA will calculate a Period Expected Metered Volume for each Baselined BM Unit.	
BR9.1	SVAA will calculate Settlement Expected Volumes if the BM Unit has been registered as a Baselined BM Unit.
BR9.2	If $QBS \neq 0$, and the BM Unit is a Baselined BM Unit, then SAA will use Settlement Expected Volumes received from SVAA.
BR9.3	For BM Units that are not Baselined BM Units, or for which SVAA has not provided a Settlement Expected Volume, the Period Expected Metered Volume will be determined as follows: $$QME_{ij} = FPN_{ij} + QBS_{ij}$$
BR9.4	For Baselined BM Units, SAA will replace the FPN received from the NETSO with the Settlement Expected Volumes calculated by SVAA and the Period Expected Metered Volume will be determined as follows: $$QME_{ij} = Settlement\ Expected\ Volumes_{ij} + QBS_{ij}$$
BR9.5	For baselined BM Units that have where submitted FPN value of NULL (see BR2.5) then Period Expected Metered Volume will be determined as follows: $$QME_{ij} = FPN_{ij} + QBS_{ij}$$

© ELEXON 2021

10 Change of MSID Pair Ownership

MSID Pairs can swap between Parties. This is an existing process introduced by P344. An MSID Pair can be registered as Baselining or Inactive by one Party, but when a change of responsible Party occurs, what status should the MSID Pair have in the new BMU?

BR10 Change of Party	
Parties can request responsibility for a MSID pair by allocating the MSID to their BMU. If the MSID Pair was previously registered for Baselining by the Previous Party, the status of the MSID Pair will revert to a default status once transferred into the new Parties BMU	
BR10.1	The status of a MSID Pair previously registered when assigned to a Baselined BMU following change of Party will be the default setting 'include in submitted expected volume'. If the MSID Pair had inactive or baselined as the previous status then this will revert to 'include in submitted expected volumes'.
BR10.2	The new Party can change the status of the MSID Pair at any time after the MSID Pair has been assigned to the BMU
BR10.3	It will be the responsibility of the Party to ensure that the registration details held with regards baselining are correct. Registration details can be amended up until midnight (24:00) on the previous Settlement Day.
BR10.4	Allocating a MSID Pair previously registered for Baselining will not automatically turn the BMU into a Baselined BMU. The Party must register this requirement. See BR1.1
BR10.5	The new Party can submit Event Days straight away including for the previous 30 days and not just for days when they are the registered Party.

© ELEXON 2021

P376 BUSINESS REQUIREMENTS

GLOSSARY AND DEFINITIONS

Term	Definition
MSID Baseline Value	The calculated expected energy flows for each MSID (or AMSID) Pair using a Baseline Methodology.
Baseline Expected Volume	The sum of MSID Baseline Volumes in a BMU
Submitted Expected Volume	Party submitted value to account for expected energy flows at MSID Pairs in a Baselined BMU that are not using the P376 solution.
Baselined BMU	A BMU that has at least one MSID Pair registered for baselining
Settlement Expected Volume	The total expected energy flows in a BMU. Calculated as the sum of Baseline Expected Volume and Submitted Expected Volume.
Default Submitted Expected Volume	A value that the Submitted Expected Volume will revert to if no other submission is received.
Baselined 'B'	Status of an MSID Pair indicating that the MSID Pair will have its expected energy flows calculated through a Baseline Methodology.
Submitted Volume 'S'	Status indication that an MSID Pair is in a Baselined BMU, but will have its forecast flows submitted by the responsible Party rather than using a Baseline Methodology.
Inactive 'I'	Status indicating that volumes associated with the MSID Pair will not be used in calculation of trading charges.
Delivery Volume	Notification by a Virtual Lead Party of what assets it has used to provide a Balancing Service

© ELEXON 2021