Final Modification Report

P375 'Settlement of Secondary BM Units using metering behind the site Boundary Point'

P375 proposes to allow Metering Equipment situated 'behind' the defined Boundary Point to be used for Settlement purposes in place of the Boundary Point Meter. Primarily, this will allow balancing-related services on-site from smaller assets to be separated from current imbalance-related activities, thus more accurately reflecting the balancing-energy volumes provided by the Balancing Service Provider (BSP).

The BSC Panel recommends **approval** of P375

The BSC Panel **does** believe P375 impacts the European Electricity Balancing Guideline (EBGL) Article 18 terms and conditions held within the BSC

This Modification is expected to impact:

- Suppliers
- Virtual Lead Parties (VLPs)
- Generators
- Meter Operator Agents (MOAs)
- Half Hourly Data Collectors (HHDCs)
- Half Hourly Data Aggregators (HHDAs)
- Supplier Volume Allocation Agent (SVAA)
- Technical Assurance Agent (TAA)

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Phase

- Initial Written Assessment
- Definition Procedure
- Assessment Procedure
- Report Phase
- Implementation

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About This Document

Not sure where to start? We suggest reading the following sections:

- Have 5 mins? Read section 1
- Have 15 mins? Read sections 1, 9 and 10
- Have 30 mins? Read all except section 6
- Have longer? Read all sections and the annexes and attachments

This is the P375 Final Modification Report, which ELEXON has submitted to the Authority on behalf of the BSC Panel. It includes a summary of the Workgroup's assessment, the Panel's full views and the responses to both the Workgroup's Assessment Consultation and the Panel's Report Phase Consultation. The Authority will consider this report and will decide whether to approve or reject P375.

There are seven parts to this document:

- This is the main document. It provides details of the solution, impacts, costs, benefits/drawbacks and proposed implementation approach. It also summarises the Workgroup's key views on the areas set by the Panel in its Terms of Reference, and contains details of the Workgroup's membership and full Terms of Reference.
- Attachment A contains the approved redlined changes to the BSC for P375.
- Attachments B - C contain the approved redlined changes to the BSC Code Subsidiary Documents for P375.
- Attachment D contains the draft redlined changes to BSCP602 for P375

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- Attachment E contains the full responses received to the Panel's Report Phase and Assessment Phase Consultations.
- Attachment F contains the business requirements to implement P375.

1 Summary

Why Change?

We are seeing more and more complex customer sites where there are numerous assets 'below the Boundary' that can be controlled independently of each other. This means that proportioning of costs etc. is not as refined as it could be. There is concern that this could be a barrier to entry as currently the BSC only allows metering at the defined Boundary Point to be used for Settlement purposes.

The P344 'Project TERRE' Workgroup recognised that P344 would not allow for complex site configurations when assigning Balancing responsibility. They recognised the need to allow for this, but felt that P344 was not the right medium to effect such change. This led to Issue 70 'Settlement of Secondary BM Units using metering at the asset' being raised, which in turn led to P375.

Solution

Amend the BSC and its Code Subsidiary Documents (CSDs) to allow asset meters installed between the Boundary and the asset to provide balancing services to be used for Settlement. Changes to the BSC will emulate existing processes as closely as possible for consistency.

The Proposer and Workgroup believe that P375 has the ability to enable significant changes to the industry, including contributing to achieving net-zero decarbonisation by facilitating greater participation of flexible generation (including demand side response).

Impacts & Costs

P375 will impact Suppliers, Virtual Lead Parties, Generators, Half Hourly Data Aggregators, Half Hourly Data Collectors and Meter Operator Agents

Centrally, it will impact the Settlement Volume Allocation Agent and potentially the Technical Assurance Agent.

P375 is expected to cost around £2m for Elexon to implement. The proposer and the Workgroup recognised that the Implementation cost is high at first sight. However, they firmly believe that in addition to the immediate benefit in widening access to the Balancing Mechanism, P375 will help to facilitate many future changes to the industry. These include, but are not limited to:

- Supporting new, commercially viable charging models for private and fleet Electric Vehicles (EVs);
- Establishment of Distribution System Operators;
- Expansion of heat pumps;
- Development of integrated energy systems;

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- Development of community energy; and
- Development of heat networks.

The Workgroup believed that £2m is reasonable from a cost-benefit perspective, as it unlocks millions of pounds in industrial and domestic consumer spending on flexible assets – this is explored further in Section four.

Costs Estimates			
Organisation	Implementation (£)	On-going (£k)	Impacts
Elexon	1.6m – 2.0m	70k -120k	Systems, documents and processes
NGESO	N/A	N/A	N/A
Industry	Unclear	N/A	Systems and processes
Total	1.8m – 2.2m	70k – 120k	

What's changed since the Assessment Report?

Following further internal review Elexon has made several non-material quality and formatting changes to the legal text. A full explanation of legal text changes following the Report Phase Consultation can be found in Section 3 and Appendix 1.

Implementation

The Panel recommend an Implementation Date for P375 of:

- 30 June 2022 if an Authority decision is received on or before 30 April 2021; or
- 3 November 2022 if an Authority decision is received after 30 April 2021 but on or before 30 June 2021.

Recommendation

The BSC Panel agreed unanimously with the Workgroup's unanimous recommendation that P375 should be implemented as it will better facilitate Applicable BSC Objectives (b), (c), and (e).

The BSC Panel also agreed with the Workgroup that P375 should be sent to Ofgem for decision as it impacts EBGL Article 18 balancing terms and conditions and P375 is not a Self-Governance Modification.

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2 What is the issue?

The issue was recognised during the development of P344. Due to restraints relating to scope and timing, it was not explored further at the time, but Issue 70 was raised to explore the issue further; which in turn caused P375 to be raised.

P344 separates out the cash flows relating to Balancing and Imbalance related activities, but does not do the same for Metering. It requires data from the Supplier's Settlement Metering (at the Boundary Point) to be used to verify delivery of Bid-Offer-Acceptances (BOAs) issued to the Secondary Balancing Mechanism (BM) Unit (SBMU) – which is a Balancing-related activity.

Completely separating the two roles wo uld require a mechanism by which the Virtual Lead Party (VLP) could install its own Settlement Metering, located at an appropriate place to measure the volume of Balancing energy provided, which may be close to the asset delivering the service.

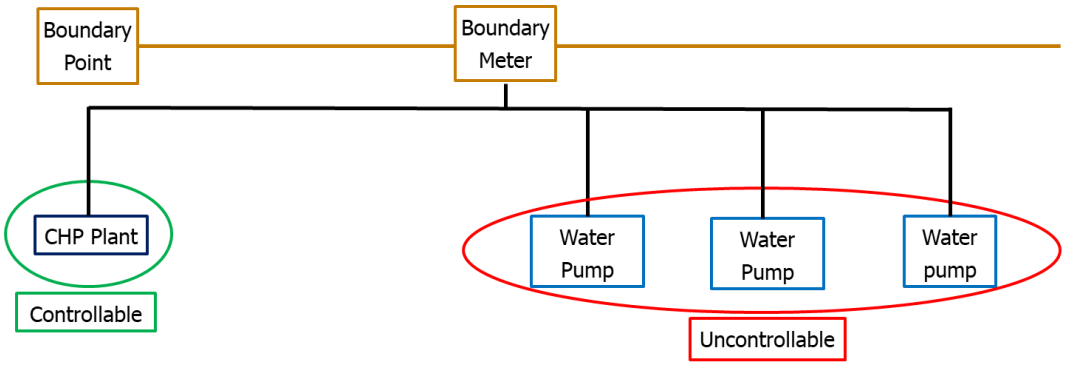
Such Metering is sometimes referred to as 'Behind the Meter' or 'Behind the Settlement Meter' because it is installed within a customer site, 'behind' the Settlement Meter installed by the Supplier at the Boundary Point. For the purposes of P375 solution, we will refer to this as an asset meter.

Example of the issue

A waste water treatment site may have significant pumping load that must run to schedule as well as a Combined Heat and Power (CHP) generator managed by a VLP. The site may be able to modulate the CHP output in response to an instruction in the BM, but an unrelated step change in the pumping load could negate, or double, the CHP output at the Boundary Point.

The BSC requires that the VLP would need to know the pumping change was going to happen, and reflect that in the Final Physical Notification (FPN). This can be difficult as often the VLP only has access to the schedule for the asset providing Balancing Services. Also, the Settlement Boundary Meter is the responsibility of the Supplier, and therefore an independent VLP often does not have access to the metering data at the boundary. Currently the FPN for Settlement and Dispatch is based on flows at the Boundary Point. If the VLP creates an inaccurate FPN, they could be liable for non-delivery volumes on balancing services volumes that were actually delivered, or conversely, avoid charges they are due to pay for failures which were masked by independent loads.

The diagram below illustrates how uncontrollable demand will affect flows at the Boundary Point.



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Allowing VLPs to use metering closer to the asset delivering the Balancing Service would mean more customers with complex sites will be able to participate in the Trans-European Replacement Reserve Exchange (TERRE) product and the Balancing Mechanism. It will enable VLPs to circumscribe Settlement to only the controllable asset, effectively cutting out the uncontrollable demand. The PN will relate to the CHP rather than the CHP plus the three pumps, thus removing the inaccuracy to Settlement from uncontrollable demand.

Not allowing Settlement from Metering behind the Boundary Point is potentially a barrier to market entry as providers will be unwilling to incur costs they have little or no control over.

Background

Since the New Electricity Trading Arrangements (NETA) were established more than 20 years ago, only Boundary Point Metering can be used for Settlement. At the time, Generation Plants were generally only connected to the Total System at a Boundary Point. However, as the industry has evolved we are seeing more and more embedded Generation, including where there are several Generating Plants sharing a Boundary Point.

The Total System is balanced by National Grid Electricity System Operator (NGESO – the Transmission System Operator (TSO) for Great Britain (GB)) in a number of ways. Primarily, balancing is based on expected consumption and planned Generation. Suppliers and Generators notify expected consumption and Generation respectively to NGESO via Physical Notifications (PNs); NGESO then compares PN data to their own predictions.

The Balancing Mechanism

If NGESO identifies a possible imbalance, they can 'turn-up' or 'turn-down' demand or Generation. Generators and consumers with the ability to turn up/down will notify their ability in their PNs, including the amount they would like NGESO to pay them – these are known as Bids (to reduce amount on the Total System) or Offers (to increase amount on the Total System), and collectively they are Bid-Offers. NGESO will issue instructions (dispatch) to increase or decrease load on the Total System as required – this is known as a Bid-Offer Acceptance (BOA). BOAs can be used to dispatch in real-time during a Settlement Period if load and/or frequency fluctuate from expected levels.

The process described above is the Balancing Mechanism (BM); and dispatching happens at BM Unit level (the lowest 'level' at which Settlement occurs). The BM is a market within its own right and participants are known as BM providers, and BM providers have numerous obligations under the various industry Codes, including the BSC.

Non-BM service providers (pre-TERRE and Wider Access)

Non-BM providers submit PNs in the same way but, once the BOA occurs, this can't be changed. As non-BM providers will only deliver the amount agreed in advance, there will be no-imbalance and therefore no Settlement liability. As such, participation in the non-BM market doesn't involve Settlement obligations, which can make participation attractive commercially.

Because the load going on/off of the Total System is a fixed amount, and will be captured by the Supplier's Boundary Point Meter(s), non-BM providers are not required to have their own Settlement Meter. However, for their own business purposes (e.g. tracking

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performance) non-BM providers normally have Meters for their assets and, more often than not, these asset meters are as accurate as Settlement Meters.

Changes in the BM and non-BM market

The European Balancing Guideline (EBGL) established the requirement for a European platform for the exchange of balancing energy from Replacement Reserves – TERRE. P344 'Project TERRE' made the necessary changes to the BSC (there were similar changes to the Grid Code too) and will be implemented in two phases. The first phase established 'Wider Access' in December 2019 for the GB market and the second phase is now expected to go-live sometime after 1 January 2021 to deliver the TERRE aspects.

P344 opens-up the BM to BSPs (EBGL term) that historically have only participated in the non-BM market, and as such have not been involved in Settlement. However, given that BSPs will only participate in Settlement in relation to P344, it was felt that they should not have the full range of Settlement obligations. To that end, a new type of BSC Party was created – Virtual Lead Party (VLP) – which may be the customer themselves or an independent aggregator acting on their behalf. Similarly, the BM Unit associated with a VLP need not meet all the criteria of other physical BM Units and as such the SBMU was created. P344 allows Balancing-related activities to be separated out from Imbalance-related activities where previously the BSC required a single party to be responsible for both.

Imbalance-related activities broadly correspond to the role of Balance Responsible Party (BRP) as defined in the EBGL. These activities remain the responsibility of the customer's Supplier, even if the customer has contracted separately with an independent aggregator. Balancing-related activities broadly correspond to the role of BSP as defined in the EBGL. P344 allows these activities to be undertaken by a VLP.

The P344 solution facilitates participation in TERRE and the BM for end-users, either on their own or through an independent aggregator. Unlike traditional power stations, customer sites are often complex and contain assets capable of participating in Balancing activities (like RR and the BM) as well other equipment that is inflexible or operates independently of the asset delivering the Balancing Service. Many industrial sites have large consumption requirements as well as generation and often these are operated entirely separately. Additionally, the growing consumer uptake of flexible assets like EVs and heat pumps is rapidly increasing the complexity of domestic demand.

FPNs and VLPs

The FPN is the last PN submitted prior to Gate Closure (one hour before the start of the Settlement Period). If the FPN does not reflect actual Metered volumes at the point of measurement the VLP will incur charges, even if volumes delivered were as expected. The inverse may happen where a VLP may not incur non delivery charges even if delivery according to Instructions was not fully achieved.

An inaccurate FPN may lead to incorrect Trading Charges but also create problems for NGESO in Balancing the System efficiently.

The potentially complex composition of consumer Sites and assets within the sites can make it difficult for VLPs to submit accurate FPNs. While the P344 Workgroup acknowledged this issue, it was agreed that it could not be addressed within the limited

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timescale to ensure compliance with the EBGL. However, in order to address the matter, Issue 70 was raised, and subsequently, P375 was raised.

Desired outcomes

P375 will amend the BSC to allow Meters behind the Boundary Point to be used for Settlement purposes. This additional precision will open up opportunities for entry into the industry, increasing competition. It will, in addition, help to facilitate some of the most significant changes to the Electricity industry since privatisation e.g. smarter grids and the transition from Distribution Network Operators (DNOs - Licensed Distribution System Operators (LDSOs) in the BSC) to Distribution System Operators (DSOs).

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3 Solution

P375 proposes to allow asset meters to be used for Settlement purposes, and the BSC and associated systems should be updated to reflect this.

While the P375 solution is relatively simple at a high level, how it will be delivered and the changes required to BSC Systems and the legal text are fairly complex due to the nuances of how Settlement is calculated. We will explore the different parts of the solution below.

Metering

An asset meter will sit between the Boundary Point and the Customer's asset used for the provision of Balancing Services. The asset meter will measure and record Active Energy – there will be no need to measure and record Reactive Energy.

One of the intents of P375 is to open up the market to as many new participants as possible. Some assets that will be used post-P375's implementation may have integrated Meters (e.g. Electric Vehicle charging points or domestic storage devices). Similarly, Meters that are already used as operational Meters should be allowed to be asset meters. Recognising this, a new standard for Metering has been created.

New Code of Practice

The Workgroup has created a new Code of Practice (CoP) – 'Code of Practice for the metering of balancing services assets for settlement purposes' – CoP11.

CoP11 will allow for existing Settlement Metering to be used for P375 Settlement purposes, but will also allow for other types of Metering to be used. In developing CoP11 for P375, the Workgroup engaged with existing Meter manufacturers, industry members and future asset operators for their input. The Workgroup has ensured that CoP11 adheres to standard industry expectations e.g. International Electrotechnical Commission (IEC) standards. As such, the Workgroup believes that CoP11 allows for existing Metering to be used, Metering that is envisaged to be able to use P375, as well as allowing for future changes in technology.

The Workgroup recognises that Meter manufacturers need certainty of what will be required, and as much notice as possible to allow them time to bring new Meters to market with certainty.

This will also mean that asset owners/operators will not install operational Meters during the implementation phase that will not meet the CoP11 standard, thus reducing the risk of potentially stranded assets.

There will be three types of Metering allowed under CoP11:

- Existing BSC Approved Half Hourly (HH) Meters/Outstations;
- Operational Meters; and
- Meters embedded within a product.

Compliance and testing protocols will be extended to cover CoP11 asset meters and the Workgroup has proposed changes to BSC Procedure (BSCP) 601 'Metering Protocol Approval and Compliance Testing' to reflect this.

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The design of CoP11 is such that, when coupled with the proposed changes to BSCP601, it will be relatively easy to review what is constituted as an acceptable type of Metering. This has been done to future-enable P375 as much as possible and to allow for the expected unknown evolution of Metering in coming years as the industry goes through unprecedented levels of change.

As with existing processes there will be no retrograde qualification. For example, if a meter meets CoP11 standards, but the VLP later wants to use that meter as a CoP3 meter - CoP3 approvals will need to be met.

CoP11 has been designed to allow SMETS compliant Meters to be used as asset meters should the VLP wish. For clarification - where an asset meter meets the CoP11 standards and also meets other standards (e.g. meets SMETS requirements), then this is coincidental – it does not follow that a SMETS compliant meter will be used in the 'smart' mode when being used as an asset meter i.e. there will be no involvement from DCC. As such, there is no particular provision for smart Meters.

Similarly, it will be possible to use prepayment Meters as asset meters. There will be no provision for prepayment Meters failing mid-Settlement period – the VLP will be aware of the risk and any costs associated from failure to deliver should be considered when electing to use prepayment Meters. Similarly, it is expected that VLPs will do due-diligence to determine whether a Boundary Point Meter is pre-payed and consider this when determining whether to enter into commercial relationships.

It should be noted that where an asset meter may also be used for purposes other than Settlement, it will still need to meet the standard pertaining to that service.

The Workgroup considered implementing CoP11 in February 2021 to create certainty for industry. However, to do this there would need to be a clause in the BSC to give it effect ahead of the remainder of P375, which would then need to be removed or superfluous following P375's implementation. It is therefore recommended that the BSC Panel approve the new CoP11 as a new CSD as per BSC Section F paragraph 2.11 with the same implementation date(s) as P375. The new CoP11 will then be held in stasis pending implementation. This means that the only way to amend it prior to implementation will be to raise a new Change. It will be approved and pending implementation, subject to Ofgem approval, and manufacturers will therefore have the required level of certainty.

Direct Current Meters

CoP11 will allow for Direct Current (DC) inverter (and/or rectifier) Meters. There are some potential assets that use inverters or rectifiers in conjunction with DC Metering. CoP11 will allow for losses to be taken into account when using DC Metering. There is only one other example of DC Metering in the BSC (for Low-Voltage assets at Offshore wind farms); DC Metering is not used for customer billing in this case. As DC Meters will not be used for customer billing, the P375 use of DC Metering will be consistent with current use.

Communications security

The P375 changes will not prescribe any particular communications security requirements – which is consistent with existing BSC provisions. Communication security risks sit between the asset owner and the entity receiving the data. As such, they should both be happy that sufficient arrangements are in place before entering into bi-lateral contracts.

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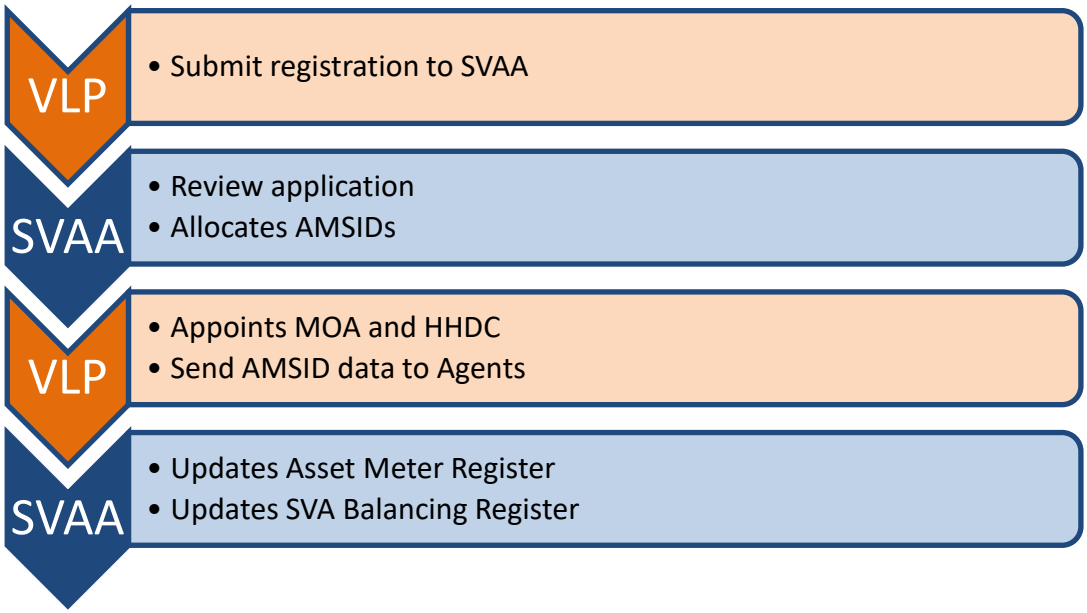
Assessment phase consultation questions and responses

The questions asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to these questions is in Section Six.

Registration process

As with all other Meters used for Settlement purposes, asset meters will need to be registered. The registration sequence will follow the same sequence, as much as practicable, as the sequence for registering a Supplier Volume Allocation (SVA) Boundary Point Meter; e.g. Meter Operator Agent (MOA) and HH Data Collectors (HHDCs) will be appointed prior to the Meter being commissioned. Further detail is in the proposed changes to the CSDs included in this report.

The simplified registration process will be:



Assignment of asset meters

Only persons registered as a BSC Party (including VLPs) will be able to register asset meters. Asset meters will only be able to be registered and used as part of a single SBMU, within a single Grid Supply Point (GSP) Group.

Asset meters will sit at a 'level below'/'behind' boundary Meters as such each asset meter will have an associated Boundary Point Metering System – this will need to be identified by the asset meter registrant during the registration phase.

To clarify, as asset meter can only operate in a single SBMU at any time. However, metering data from multiple SBMUs may be used by the SVAA in their P375 calculations.

Assessment phase consultation questions and responses

The questions asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to these questions is in Section Six.

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Asset MSIDs

Much like Metering System Identifiers (MSIDs) are used to identify individual Boundary Point Meters, and MSID Pairs are used where there are associated Import and Export, P375 will create the asset MSID (AMSID). AMSIDs will be used to identify individual asset meters and AMSID pairs where there are associated flows to and from an asset.

Just as each asset meter will be associated with a Boundary Point Metering System, so each AMSID will be associated with a Boundary Point MSID. Again, this will be identified by the registrant during the registration process.

Registration of asset meters

The Settlement Volume Allocation Agent (SVAA) will be required to create a register of all asset meters – the asset meter register (AMR). The AMR will be similar in content to the SVA Metering System Balancing Services Register and serve a similar function (and ergo have the same status), but for AMSIDs. The process for registration will be covered in BSCP602 'SVA Metering System Register', which is included as an attachment to this report for reference.

Losses and corrections

The SVAA will assign (following calculation where appropriate) a GSP Group Correction Factor and Line Loss Factor Class (LLFC) ID. Generic LLFs will be used as matter of course, unless a Site Specific LLF is created and assigned.

Change of registration and de-registration

It will be possible to change the VLP to which an asset meter is registered as well as being able to de-register an asset meter. Each of these processes will emulate the existing processes for Boundary Point Meters.

Upon change of VLP, the new VLP will inform the SVAA of the change, and by implication request that the asset meter and associated AMSID(s) are registered to them. The SVAA will inform both the old and the new VLP once the AMSID pair re-allocation has occurred, and the old VLP will have the ability to raise a dispute in case of an erroneous transfer. The details pertaining to this will be added to the relevant CSDs during the implementation phase.

General Data Protection Regulation and Data Protection Act 2018

The General Data Protection Regulation (GDPR) and Data Protection Act (DPA) 2018 lay out how personal data should be handled. Given that there is scope for domestic sites to be included in P375 assets, the Workgroup was conscious of how personal data should be handled.

There are existing arrangements in place for protecting personal data in the BSC and it is expected that any VLP and/or their Agents will have their own processes in place to meet GDPR and DPA requirements to protect personal data.

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Assessment phase consultation question and responses

The question asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to this question is in Section Six.

BSC Party Agents

HHDCs will be appointed by the VLP in a similar way to the appointment of SBMU HHDCs i.e. by sending Data flows laid out in the relevant BSCPs. HHDCs will be required to undertake the similar proving processes as with other meters to demonstrate their ability to communicate with an asset meter. While it will be the HHDC's role to collect data, ultimate responsibility will lay with the VLP.

As discussed above, the types of Meter that will be considered an asset meter may be quite different to those seen elsewhere in Settlement. As such, the companies charged with their operation may well only encounter CoP11 Meters; similarly, existing BSC qualified MOAs may not be familiar and/or comfortable with the operation of many asset meters. Given this, the Proposer, with the Workgroup's support, proposes:

- All Meter Operators with a BSC MOA qualification can be appointed as an asset meter MOA; or
- Meter operators who will only provide services for asset meters (referred to as 'VLP Agent' in the draft legal text) need only complete the BSC Qualification process applicable to asset meters below the threshold laid out in CoP11;
- Should the VLP Agent subsequently wish to be a MOA for non-asset meters (e.g. for SVA Metering), then they will need to complete the full BSC Qualification, but only the bits they did not complete as part of their VLP Agent Qualification; and
- BSCP537 'Qualification Process for SVA Parties, SVA Party Agents and CVA Meter Operators' will need updating during the implementation phase to recognise this.

HH Data Aggregators (HHDAs) are appointed by the Supplier for the Boundary Point Meter. Their only interaction will be the provision of Boundary Point Meter data as they do for Wider Access and TERRE.

For complex sites and/or where Boundary Point Metering is shared, it is normal to appoint the same MOA and HHDC for all meters part of that Metering System for the sake of differencing. However, under P375 there is no need for the HHDC and MOA appointed to the asset meter to be the same as those appointed by the Supplier for the Boundary Point. The reason for this is that all differencing will be undertaken by the SVAA based on data provided to them i.e. the SVAA will do all the necessary calculations, and not the HHDC or MOA.

Assessment phase consultation question and responses

The questions asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to these questions is in Section Six.

Elexon is mindful of proposed changes to MOA qualification and that 'ownership' of such may move to the Retail Energy Code (REC) in the future. As such, Elexon will ensure that the Industry Expert Group is aware of this change when considering the qualification

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process for VLP Agents. In preparation for this we are engaging with Elexon colleagues working on the REC.

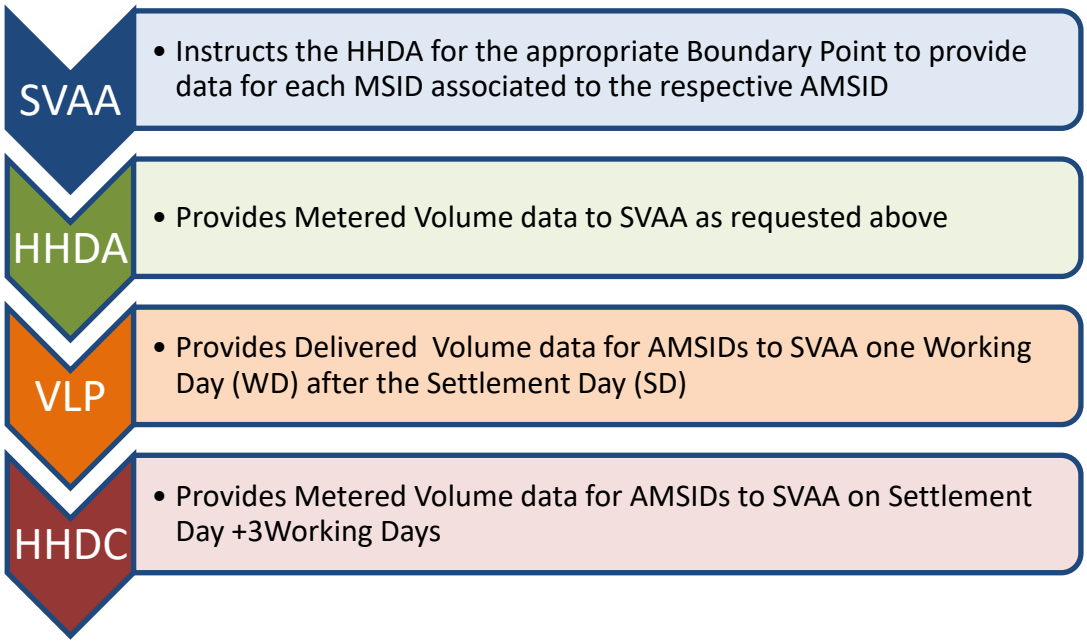
Sharing of Metered data

The process for sharing of asset meter data between the VLP, HHDC and SVAA, as well as Boundary Point Meter data from the HHDA has been designed to emulate existing arrangements as much as possible.

Once the SVAA has received all of the required data, they will then apply the rules in BSC Sections S 'Supplier Volume Allocation' and BSC Section S, Annex S-2 'Supplier Volume Allocation Rules' to calculate the respective Settlement positions before passing that data to the Settlement Administration Agent (SAA).

As with P344, the registrant of the Boundary Point Meter will not be informed of the data from the asset meter, regardless of the impact on their imbalance position.

The simplified process will be:



Consultation question and responses

The question asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to this question is in Section Six.

Assurance

The Performance Assurance Board (PAB) has responsibility for ensuring appropriate assurance is undertaken to maintain the integrity of Settlement. As part of the Implementation phase the following will need to occur:

- Update Technical Assurance Agent's remit;
- Update Qualification processes;
- Update Settlement Risk Register; and
- Consider P375 implications when setting and reviewing assurance objectives.

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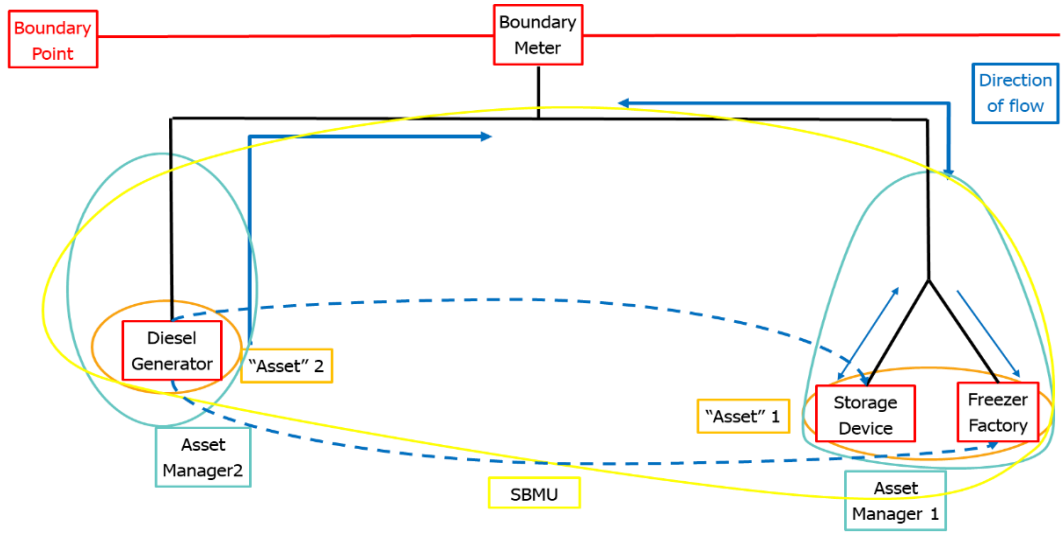
Multiple points behind the boundary

The solution so far has focused on a single asset and a single VLP behind the boundary. However, the reality is that there may be multiple assets and multiple VLPs associated with a single Boundary Point Meter.

Existing arrangements

Under the provisions established by P344 all assets behind the Boundary will be collected together in one SBMU. Even where there are multiple asset managers, only one of them will be the VLP associated with that SBMU and subsequent arrangements between the asset managers are outside of the BSC.

Example of existing arrangements



Two VLPs and single asset meter

Where there are two asset managers beneath the Boundary Point, P375 will allow each of them to be a VLP so long as one of them installs and commissions an asset meter. The volumes associated with the other VLP(s) will be calculated by the SVAA by applying 'differencing' based on the asset meter reads, the Boundary Point Meter reads and the data submitted by the HHDA, HHDC and the VLP with the asset meter.

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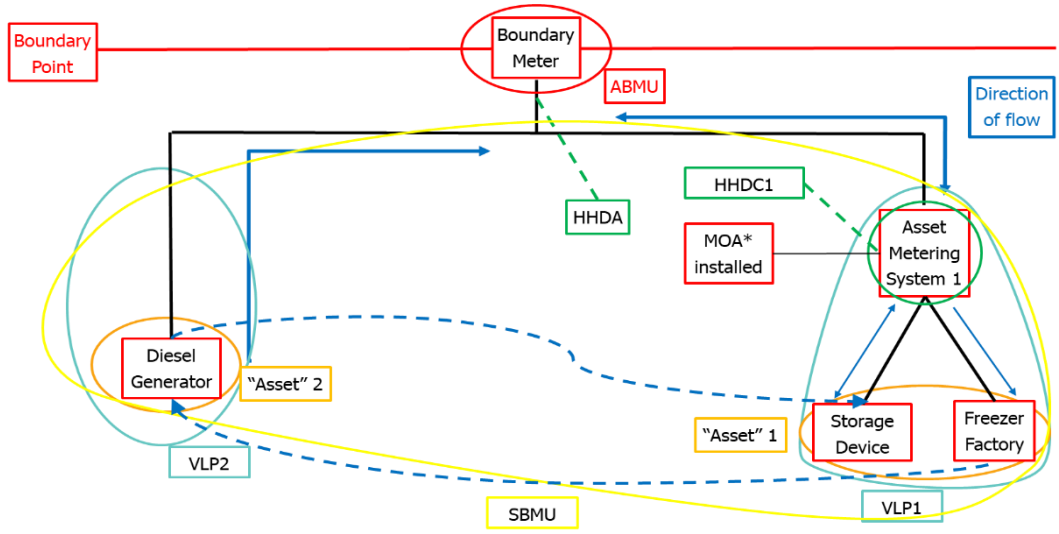
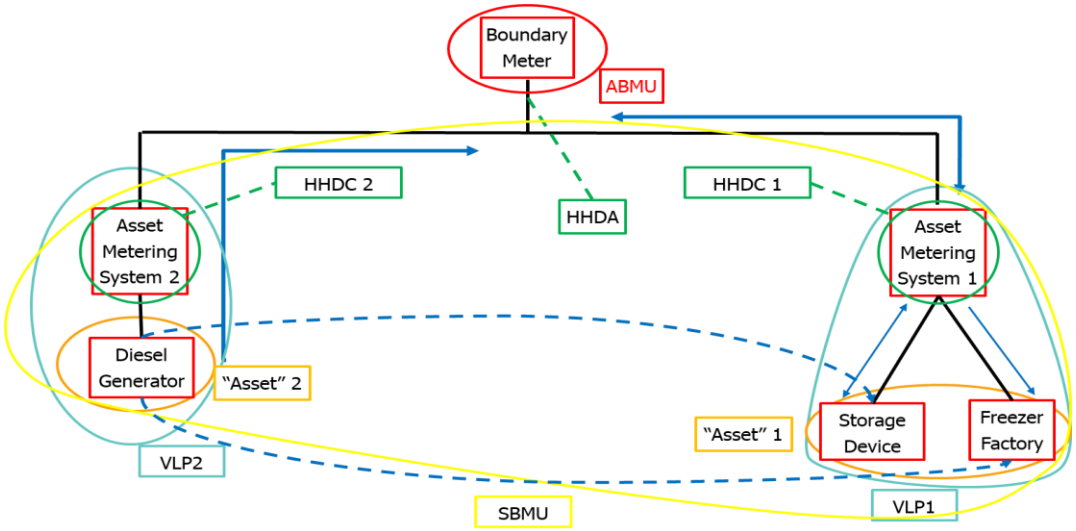
Example of two VLPs and single asset meter



Two VLPs and two asset meters

Where there are two asset managers beneath the Boundary Point and two VLPs, each VLP can install and commission an asset meter for each of their assets. As with the above example, they may be in a single SBMU, but as each asset will have its own asset meter, the SVAA will assign volumes accordingly based on data submitted, rather than calculated.

Example of two VLPs and multiple asset meters



Conversely, if there is only one VLP that has control of asset 1 and asset 2 in this example, then when the SBMU is dispatched by NGESO, the VLP can determine how best to use their Plant and Apparatus between the two assets to best deliver that instruction.

Multiple VLPs and asset meters

While the examples above illustrate how sites can be established with two VLPs and/or assets, the P375 solution will allow for multiple assets and multiple asset meters (N). For differencing to be used, the number of asset meters shall be N-1.

The examples above are included for illustrative purposes only, they are not reflective of expected configurations.

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Legal text

The proposed legal text for P375 is at Attachment A. We have also drafted the new CoP11 and changes to BSCP601 and BSCP602 as attachments B – D, though note that BSCP602 is only being presented for information.

An explanation of the formulas proposed in BSC section S-2 is included in the Workgroup discussion at the end of section six.

Assessment phase consultation question and responses

The question asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to this question is in Section Six.

Business Requirements

The Business requirements in Attachment E lay out what we consider needs to be delivered in order for P375 to be implemented. These are the basis on which draft legal text and CSD redlining has been undertaken and will form the basis for system requirements during the implementation phase, as well as the drafting of outstanding CSDs.

Are there any (other) alternative solutions?

The Workgroup has not proposed an alternate solution for P375.

Assessment phase consultation question and responses

The question asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to this question is in Section Six.

Report Phase Consultation

Over the course of the Report Phase it became clear that there were a number of formatting and quality changes that were required to all documents of the P375 solution. An exhaustive list of clarifications and the justifications for doing so can be found in Appendix 1. It should also be noted that BSCP602 requires further material changes and these will be done as part of implementation, as per the majority of other CSDs. However, the most up-to-date version of this document is provided for information.

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4 Impacts & Costs

The Proposer and the Workgroup recognise that the cost of £2m associated with P375 is, on first look, significant. However, they believe that this cost is justifiable given the opportunities they think P375 will create across the industry. These are discussed in more detail below.

Estimated implementation costs

Implementation cost estimates			
Organisation	Item	Implementation (£)	Comment
Elexon	Systems	1.6m – 2.0m	Based on rough order of magnitude impact assessment
	Documents	3.5k – 5k	Costs to implement the BSC documents
	Other	10k – 15k	Website, LWI updates etc.
NGESO	Systems	N/A	No impact
Industry	Systems & processes	Unclear	As below
	Total	1.6m – 2.0	

Indicative industry costs of P375

Only one respondent (a Party Agent) provided figures to make changes (£190k - £280k) to offer services to their clients. Feedback from Workgroup industry members and consultation responses is that any costs associated with P375 are recoverable e.g. through increased asset participation in flexibility markets. Implementation of P375 and registering asset meters, as well as offering metering service will be a business decision for VLPs and Party Agents respectively, and it is exceptionally unlikely that they will follow this route unless they have already identified that it is in their financial interest.

Estimated ongoing costs

On-going cost estimates		
Organisation	Implementation (£k)	Comment
Elexon	70 – 120k	Registration activities assumed to be manual. Elexon are seeking to automate to reduce these costs.
NGESO	N/A	
Industry	Unknown	None provided.
Total	70 – 120k	

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Consultation responses

Consultation responses indicated that there will be significant uptake of P375, and anecdotal evidence from Workgroup members suggests that P375 uptake will be larger than for other significant BSC changes introduced recently and/or in development e.g. TERRE and/or MARI – however, not all Workgroup members were sure if this will be the case.

Consultation responses indicated that there would need to be system and process changes to implement P375, whether for VLPs or Party Agents (16 of 22 stated they would be impacted, with five being neutral). They confirmed the Workgroup's initial thoughts that uptake will have positive effects ('extremely positive impact' in the case of one trade association's members), so any impact will be to achieve commercial gain and/or offer further services to clients.

Further Workgroup discussion pertaining to these questions is in Section Six.

P375 Estimated Benefits

The estimated benefit of P375 is **~£140m per year**. This is based on both direct and indirect benefits: **~£50m per year** and **~£90m per year**, respectively.

Direct benefits are characterised by the benefits that will be directly generated by P375 via efficiencies and opening routes to market. Indirect benefits are characterised by the potential for P375 to facilitate large scale projects, for example wide scale Demand Side Response, by enabling innovation.

Direct Benefits

The estimated direct benefit of P375 is **~£50m per year**. This is based on the benefits case for P344. This in turn is based on a report conducted by Charles River Associates in a paper produced for Ofgem in April 2017 titled 'An assessment of the economic value of demand-side participation in the Balancing Mechanism and an evaluation of options to improve access'. Their report estimated potential benefits of £100m - £530m per year in 2020 rising to £140m - £580m per year by 2030. At the time of the P344 Modification Report being submitted to Ofgem (June 2018), the lower figure of £100m was used. The range in benefit is due to there being several assumptions in the report, but the figures are commensurate with other such reports at the time.

Given the delays in the roll-out of TERRE, it would not be too far a leap to assume that these benefits have been delayed, but are still potentially achievable. The Workgroup realised that not all of the Aggregators using the P344 solution would use the P375 option, but even if half of them do make use of asset meter, and the realisation is at the very lower end of the range, then the estimated benefit for industry could still be as much as £50m a year.

Indirect Benefits

The estimated indirect benefit of P375 is **~£90m per year**. This is based on the assumption that P375 will facilitate the implementation of large scale projects. The three main projects considered were:

- Rollout of EV charging infrastructure;

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- Demand Side Response; and
- The Heat Network Investment Project.

The table below shows the estimated benefits of these projects. Noting that it is by no means definitive, a rough assessment would indicate consumer savings of ~£18bn per year.

Project	Estimated Total Benefit	Estimated Benefit of P375 (0.005% of total)
EV charging infrastructure	£8.1bn/year[1]	£40.5m/year
Demand Side Response	£8bn/year[2]	£40.5m/year
Heat Network Investment project	£2.5bn/year[3]	£12.5m/year
Total	**~£18.5bn**	**~£90m/year**

It is not possible to put an accurate cost on a lot of ongoing development projects. Additionally, the Workgroup and Proposer are very aware of the possibility of double counting benefits (e.g. the cost of developing a smart grid could include the cost of developing an EV charging network). However, the Proposer and Workgroup accept that P375 will be a facilitator of these projects rather than the driving force. Nonetheless, if we estimate that P375 will account for just 0.005% of the benefits from the three projects described, it could be argued that P375 could save consumers ~**£90m** per year by 2030.

Please note that this is an indicative figure and is not an accurate assessment – it is used merely to illustrate how P375 could contribute towards facilitating greater industry change.

Workgroup's views on impacts, costs and potential benefits

Regardless of what type of Metering is developed as part of any future smart grid and/or integrated energy system, the way in which CoP11 has been developed means that almost any type of energy flow measurement device could become an asset meter – so long as they meet the minimum requirements.

While P375 will not solve any of the problems associated with developing a future energy system, it will, as far as the Proposer and Workgroup believe, pave the way and facilitate change. Further, they believe that as every-one of us is expected to benefit from smart grids, integrated energy systems, shift to EVs etc. then the cost of £2m amongst 28m

[1] Assumes £800 - £1,000 (based on RAC estimates) saving/vehicle and 9m EVs by 2030

[2] BEIS November 2017 report

[3] Savings vary but 15%/year is a rough consensus. Heat accounts for roughly half of all energy bills - £90/year for 28m homes – does not include industry savings

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consumers (roughly seven pence each) is not significant a cost considering the potential benefits that P375 will help to achieve.

The Workgroup agreed unanimously with the potential impacts on BSC Parties, Agents and BSC Systems etc. (see tables at the end of this section).

Associated benefits of implementing P375

This subsection provides several examples and context as to how P375 will generate benefits for industry and consumers. P375 will allow asset meters to be used for Settlement purposes, thus making the proportioning of balancing responsibility more accurate. However, the use of Asset Meters for Balancing and Settlement is expected to open up an array of opportunities, whether they be commercial or regulatory. The examples below have all been identified by the Proposer and Workgroup as being potential benefits to be considered against the cost of implementation.

Smart Grids

The transition from Distribution Network Operators (DNOs – known as Licensed Distribution System Operators (LDSOs) in the BSC) to DSOs is well under way – the Energy Network Association's Open Networks Project is testament to this. In addition to this, there are numerous other initiatives and projects underway to facilitate the delivery of a smarter grid.

It is anticipated that DSOs will take over a lot of the functions undertaken by TSOs i.e. in the context of the BSC, DSOs will be responsible for taking proactive actions to manage power flows on their networks in the way that the TSO (NGESO) does now.

The rise of decentralised energy will lead to a far greater number of sites on a Distribution System. These sites will have smaller capacity than traditional, centralised Transmission connected power plants i.e. Megawatts compared to Gigawatts. This will mean that the DSO will need to be a lot more proactive than the TSO to maintain balance. However, they will also be able to balance on a more local scale. Asset Meters will enable DSOs to have more sight of what is happening on their systems, thus giving them greater flexibility in their planning. Further, it will allow VLPs to offer services to DSOs as well as participating in the Balancing Market.

One analogy that was used by the Workgroup was that using the Boundary Meter to manage a local imbalance is like topping up an egg cup from a gallon-drum, whereas using an Asset Meter is more like using a small glass.

New Avenues to Market

Implementation of P375 will allow Aggregators to aggregate flows from their Assets into a single 'pot' large enough to enter the wholesale market. One example of how this could work is for an aggregator to engage with multiple home owners to aggregate the export from small scale Solar Photovoltaic (PV) on people's roofs – whether registered for Feed-in Tariffs (FIT) payments, the Smart Export Guarantee (SEG) or otherwise.

If an Aggregator is able to collect together enough volume (either directly from the PVs or connected storage), then they will be able to compete against other, larger Generators in the wholesale markets. This would give homeowners and consumers far more control over

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how they engage with the market, which is democratisation of energy. It would also provide a route for community energy groups and cooperatives to come to market.

A significant proportion of FIT installations are owned and operated by providers of social housing, with the profits being re-invested in the community. Although the SEG scheme is still in its infancy it is reasonable to assume that it will follow a similar pattern to the FIT scheme.

The data from Asset Meters would be accessible and it would be relatively easy for investors to analyse the benefits of investing in small scale generation, thus promoting its uptake and growth, leading to further decentralisation of energy (and decarbonisation if such growth is connected to renewable and low-carbon energy).

Electric Vehicles

From an energy perspective, EVs can be considered as mobile storage devices. We have discussed with Workgroup Members how vehicles plugged into charging points (when aggregated in a geographical area) can be used to enter the BM market.

At the moment, charging is Metered in a number of ways – it can be via Meters in the charge point or by devices in the charging cables that measure the flow of electricity. There are provisions within the BSC to approve these types of devices on a case-by-case basis, but it requires approval from the Supplier Volume Allocation Group (SVG) and can be quite time consuming and could be perceived as a barrier to entry.

CoP11 will allow for a Meters embedded in charging points/devices to be approved in the same way as any other Settlement Meter, and in the same timescales. This will, it is believed, remove a perceived barrier to entry which will, in due course, help with the growth of Electric Vehicle charging, when coupled with other regulatory measures.

It should be noted, that EV charging growth is predicted to happen in two ways:

- Large scale charging parks (e.g. a whole carpark of charging points) connected at a single boundary point; and
- Individual charging points as part of wider sites where the charging points asset meter can be used to offer services – either individual vehicles, or as part of a wider aggregation

It is the latter example that P375 is concerned with and where it will facilitate growth. We have spoken to one organisation that is looking at developing this solution by tying in EV charging points and on-street furniture, with an Asset Meter in the cabinet, to be able to aggregate volumes in a geographical area, and they have indicated that P375 will make this more commercially viable. Further Modifications will be required to detail how these arrangements could work, but P375 can act as the foundation on which they are eventually built.

Renewable Energy and Storage

It has been widely discussed that renewable technologies will form a significant part of future smart grids. Incorporating this level of renewable energy will require significant investment in flexibility to benefit from zero-marginal cost generation. It is the Proposer's and Workgroup's belief that storage will go a long way, if not all the way, to resolving any concerns around the intermittent generation associated with renewables. Their reasoning

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is that storage (whether in a battery or another form, such as heat) and flexible operation (which is analogous to storage) can be used to store energy as the market allows, and the stored energy can be used as an alternative to other energy sources as required.

If a VLP has storage devices as part of the Asset alongside renewable generation, then they can offer balancing services independent of the renewable technology. Essentially, being able to dispatch individual storage assets, thanks to Asset Metering, will give the TSO and/or DSO more options.

N.B. the P375 solution does not itself provide a mechanism through which assets can be dispatched individually (it will allow the VLP to choose which assets to use within a SBMU), but it will pave the way for such a scenario and contribute significantly to the growth of smart grids. It is also believed that allowing Asset Meters will give increased security for storage owners (amongst others) to enter the market.

Integrated Energy Systems

It is becoming generally accepted that to achieve 'net zero' targets there needs to be an integrated energy system. At the moment, policy and regulation for the main energy streams (electricity, gas, heat, carbon fuels and water) exist in isolation. As we move forwards, an integrated energy system will tie each of these energy streams together. As an example, changes to heat policies will consider how they will affect electricity demand to power heat pumps; which in turn will consider the use of gas and water in producing the electricity; or the use of water and gas and/or electricity to create steam for a heat network.

It has been suggested that having heat pumps (for example) as part of a VLP's Asset will allow DSOs (once the smart grid is established) to use the heat pump to increase/decrease demand as required.

With the increase in smart appliances in homes (which in themselves are more efficient than older appliances), P375 will make it easier for consumers to offer balancing services via an Asset Meter.

One of the keys to achieving net-zero is achieving integrated energy systems. To achieve this, it is recognised that there is a need for greater flexibility, including an increase in smaller scale service provision i.e. Assets. This is explored further in National Grids Future Energy Scenarios 2020.

Proposed BSC Modifications

The following BSC Modifications may make use of the P375 solution. The Proposer and Workgroup's proposals for P375 do not suggest a position on the following Modifications:

- P379 'Multiple Suppliers through Meter Splitting' aims to allow consumers to be supplied by multiple Suppliers. It will allow this by allowing more than one Supplier to utilise a single Boundary Point. As part of this, Asset Meters may be used to identify appropriation of volumes. P379 is still being developed, but early indication is that a lot of the P375 solution will form part of the P379 solution.
- P383 'Enhanced reporting of demand data to the NETSO to facilitate CUSC Modifications CMP280 and CMP281' aims to enable the aggregation of specific Metering Systems Metered data for network charging purposes. Having Asset Meters on site will allow for greater accuracy in such aggregation.

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- P395 'Excluding generators from BM Unit Gross Demand and the calculation of EMR Supplier Charges' will change how energy is attributed to Generators by the BSC where Suppliers are providing electricity which falls outside of the Electricity Act 1989 definition of 'Supply'. Asset Meters on sites where this occurs will enable accurate calculations to be made.
- P415 – see wholesale market paragraph below

Community Energy

The premise of a community energy group is that members trade energy between each other. At the moment this is done either via private networks (outside of the BSC's concern) or between sites connected to the Total System. In the latter scenario, Boundary Point Metering, and therefore Suppliers' Meters, are used to calculate the amount of energy transferred.

In a scenario where two members of a community energy cooperative are both situated beneath the Boundary line, Asset Meters can be used to identify how much energy flows from one to another. This, in itself, is outside of the concerns of the BSC as this is a private network. However, if one (or both) of those community Assets was used to provide Balancing Services to the Total System in addition to services to their peers, then any income from doing so could be used to benefit the wider energy community.

The growth of community energy could arguably form a central part of the de-centralisation and democratisation of energy. It forms part of almost all forward thinking and is generally accepted as being a key part of future energy policies. As such, it is likely that the BSC will have to change in due course to facilitate developments in community energy trading. By implementing P375, the BSC will be well placed for future market developments as it will already have a solution in place to support further market innovation.

Data Provision

The use of data in energy forms part of the Government's key industrial strategy and is being led by Ofgem and Energy Systems catapult. By adding an extra layer of data to the mix, i.e. Asset Meter data there will be more, and increasingly specific, data available. As discussed above, smart Meters will be able to be used as Asset Meters, so P375 could aid with the government's plans for smart Meter roll-out, for example; if SEG Export Meters are smart Meters.

Access to Wholesale Markets

One of the Assessment Phase consultation responses (not Enel X – see below) pointed out that similar arrangements for Asset Metering already exist in France where aggregators have access to the wholesale market via Asset Metering. As such, it is possible that P375 could facilitate similar arrangement in the GB market, thus providing a new route to market and increasing competition in the wholesale market. On 30 September 2020, Enel X UK Ltd raised Modification Proposal P415 'Facilitating access to wholesale markets for flexibility dispatched by Virtual Lead Parties' – Elexon presented their Initial Written Assessment to the BSC Panel on 8 October 2020 and the BSC Panel approved P415 to move into the Assessment Phase.

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Faster Switching and the Retail Energy Code

Ofgem is conducting a Significant Code Review (SCR) looking at how Switching can be improved as well as introducing a new Industry Code – the Retail Energy Code (REC). There will be aspects of the BSC that will be impacted by this where Metering (Boundary Point Metering) is covered by multiple Code requirements. e.g. BSC, DCUSA and SEC. Given that Asset Meters will be for BSC purposes only and will only be governed by the BSC, anything that happens with the SCR is not expected to affect the P375 solution.

P375 impacts

Impact on BSC Parties and Party Agents	
Party/Party Agent	Impact
Suppliers	Will impact on Boundary Meter data and imbalance. The more granular data provided by Asset Meters will ensure more accurate imbalance positions
Generators	Only if they elect to Implement new process to take advantage of the proposed solution
Virtual Lead Parties	
HHDAs	Will be required to introduce MSID data to SVAA
HHDCs	If they elect to offer HHDC services for asset meters, they will need to implement new processes
MOAs	If they elect to offer MOA services for asset metering, they will need to implement new processes

Impact on the NETSO
NGESO expects minimal system change to accommodate P375 that can be delivered well within the anticipated implementation period

Impact on BSCCo	
Area of ELEXON	Impact
Customer Operations	Will require changes to customer engagement for Operational Support Managers; new Assurance techniques and risk monitoring; new Metering registration processes
Digital Operations	Testing and roll-out of changes to BSC Systems; new processes for Settlement and Invoicing; additional monitoring by Analysis and Insight; impact on SLAs with Service Provider
Other	Increased communications to raise awareness of P375, its opportunities and implications

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Impact on BSC Settlement Risks
P375 will impact on Settlement Risks 001 to 026 inclusive as P375 will effect/replicate the processes covered by these risks, therefore there is a risk that if P375 data is not handled/submitted correctly, these risks could become issues. To mitigate this, Elexon will engage with industry (see implementation plan) to ensure that processes are fit for purpose.

Impact on BSC Systems and process	
BSC System/Process	Impact
SVAA	New processes and rules for calculations before sending data to SAA

Impact on BSC Agent/service provider contractual arrangements	
BSC Agent/service provider contract	Impact
SVAA	New processes and rules for calculations before sending data to SAA
TAA	Potentially, new Assurance activity if directed by the PAB

Impact on Code	
Code Section	Impact
BSC Sections J; K; L; S; S-2; X-1; and X-2	Amended to reflect the P375 solution

Impact on EBGL Article 18 terms and conditions
Parts of the proposed legal text changes form part of the EBGL Article 18 terms and conditions of balancing due to impacts on BSC provisions K8 and S11, as detailed in BSC Section F Annex F-2. The Panel believes that these changes will be consistent with the EBGL objectives as it fosters competition, and supports the uptake of aggregators and storage by providing them with another means of coming to market.

Impact on Code Subsidiary Documents	
CSD	Impact
BSCPs 601 and 602	Amend to reflect changes to BSC Sections and P375 solution – will be updated as part of implementation
BSCP537	Amend to reflect changes to qualification requirements – will be updated as part of implementation
BSCP 502	Update HHDC obligations – will be updated as part of implementation
BSCP514	Update MOA obligations – will be updated as part of implementation

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Impact on Code Subsidiary Documents	
CSD	Impact
BSCP537	Update MOA qualification process – will be updated as part of implementation

Impact on other Configurable Items	
Configurable Item	Impact
CoP11	New Code of Practice of asset meters. To be approved by the Panel as part of P375.
User Requirement Specifications	To be amended as identified during System development and testing
Business Definition Documents	
Interface Definition Document	

Impact on Core Industry Documents and other documents	
Document	Impact
All documents	Nil impact

Impact on a Significant Code Review (SCR) or other significant industry change projects
Ofgem confirmed on 12 December 2018 that P375 was SCR exempt

Impact on Consumers
Will pave the way to allow increased consumer interaction in the energy industry. Examples of this can be found earlier in this section, under the heading 'Associated benefits of implementing P375'

Impact on the Environment	
This Modification is consistent with the net zero target. As described above, P375 will facilitate other changes that will make positive Environmental changes	

Other Impacts	
Item impacted	Impact
Contribution to 'net zero' transition	See Proposer and Workgroups beliefs above
Facilitation of EV charging becoming more commercially viable	
Facilitation of integrated energy systems	

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Other Impacts	
Item impacted	Impact
Facilitation of increased flexibility for TSO/DSO when balancing	

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5 Implementation

Recommended Implementation Date

The Panel recommend an Implementation Date of:

- **30 June 2022**, if an Authority decision is received on or before 30 April 2021; or
- **3 November 2022**, if an Authority decision is received after 30 April 2021 and before 30 June 2021.

At its meeting on 8 October 2020 (307/06), the Panel recommended P375 is implemented on 30 June 2022 so long as an Ofgem decision is received by 30 April 2021.

When the Draft Modification Report was presented to the Panel on 10 December 2020, Elexon offered a fall-back, Implementation Date, should Ofgem be unable to provide a decision by 30 April 2021 of 3 November 22, so long as an Ofgem decision was received before 30 June 2021.

Why are we adding November 2022 as a delivery option?

Since we issued the Report Phase Consultation we have been further considering the implementation options for P375 as the delivery pipeline continues to evolve. The delivery pipeline over the next few years contains significant uncertainty with an expected high volume of complex changes. For example, the following are contributing to the uncertainty:

- TERRE go-live – ESO are compiling likely scenarios for TERRE. Whilst we are engaging with ESO on its future TERRE plans, we will need at least eight weeks' notice to re-start any TERRE go-live activities. Further TERRE activities may impact committed or planned Modifications and Change Proposals impacting Elexon systems;
- MARI – it's future, like TERRE remains uncertain and is dependent on GB's future trading relationship with the EU;
- Ofgem SCRs – whilst recent changes to the Retail Code Consolidation and Faster Switching SCRs have required re-planning, it is Market Wide Half Hourly Settlement (MHHS) that is expected to require major changes from 2023. It is not yet clear what capacity to deliver other changes during this period will be as the design and planning for MHHS remains fluid;
- Elexon's upgrade of BSC central systems – work is planned around known industry driven change. For example, it is important for us to make progress with the SAA upgrades, with an opportunity next year to complete a major migration of SAA data whilst there is limited industry change required to this system. Efficient SAA migration in this window would ensure it is in place in time for Market-wide Half Hourly Settlement.

We note that the June 2022 delivery remains achievable, based on the current delivery pipeline, but is subject to changing demands, in the intervening period. We believe it prudent to add a fall-back delivery date of 3 November 2022, should Ofgem be unable to form an opinion by 30 April.

We also note that Ofgem recently announced it expects the Central Switching Service (CSS), as part of its Faster Switching SCR, to be implemented in summer 2022.

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Workgroup's Recommendation

The Workgroup recommended an Implementation Date for P375 of:

- 24 February 2022 if the Authority's decision is received on or before 29 January 2021; or
- 30 June 2022 if the Authority's decision is received after 1 February 2021 but on or before 30 April 2021.

However, since the Workgroup closed, Elexon re-assessed its delivery pipeline during 2021 and is now of the view that delivery in February 2022 will be extremely challenging and would require implementation work to begin in November 2020, before Ofgem approval. The following changes have fixed deadlines which are contributing to the constraints for delivery:

- P402 'Enabling reform of residual network charging as directed by the Targeted Charging Review'
- P407 'Project MARI (Manually Activated Reserve Initiative)'
- P410 'Changing imbalance price calculations to comply with the Imbalance Settlement Harmonisation regulations'

Elexon therefore recommended to the Panel that P375 be **implemented on 30 June 2022** if a decision is received on or before 30 April 2021. This approach was also seen to support participants calling for sufficient implementation lead time for their systems and processes, as well as the BSC CSDs. The Panel adopted this position when the Assessment Report was presented to it on 8 October 2020.

Code Subsidiary Documents

The Workgroup recommends that Elexon works with industry members akin to a workgroup to develop Code Subsidiary Documents during the implementation phase. This will mean that they will have expert input when drafting processes and operational rules. The changes to CSDs will be consulted on as part of the standard release process.

Elexon did something similar with P344 and it was successful in allowing industry greater input into developing CSDs.

The Workgroup has recognised that a lot of work needs to happen in the implementation phase in order to deliver CSDs. Elexon worked through the Report Phase to plan this work so that they are ready to commence as soon as Ofgem approve P375. Elexon will draft the relevant CSDs for review at industry expert groups, scheduled to be held through the first quarter of 2021. The workgroup would ask that industry members contact Elexon to let them know their priorities for drafting. i.e. which CSDs will they need to see complete to allow them to start their own implementation process to meet the P375 implementation date.

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6 Workgroup's Discussions

The first two Workgroup meetings were held jointly with the P376 Workgroup due to similarities on the proposed solution – P376 is looking to resolve a similar issue by developing a methodology to baseline load, rather than use an asset meter. The Workgroup notes reflect discussions relevant to P375.

General principles for P375

P375 and P376 seek to ensure that rigour is applied to the way Balancing Services are provided, and that it would be important for the independence of assets to be demonstrated as part of this to ensure that services being delivered were legitimate and not open to abuse. For example, we would want the action to be accurately compensated if that action stopped the Total System being negatively affected. However, it's important to ensure that the action was being undertaken independently and didn't intentionally happen at the same time as other events on site. For example turning on a Generating Unit may automatically switch on a pump. Therefore the Workgroup concluded that moving to Settlement based on flows at the Operational Metering should not be at the expense of calculating the impact on the Total System.

A Workgroup member noted that there was no limit on the number of SBMUs that could be registered and so it would be possible to register each asset in its own SMBU relating to a GSP, as long as it met the volume requirement which is 1MW for Replacement Reserve. However, they noted that this is not economically viable.

Physical Notifications

The Grid Code requirement is for the PN to represent flows at the GSP Group level, with the data captured at the Boundary Point. The PN should be an accurate forecast of actuals flows for the relevant Settlement Period for when the Balancing Service is delivered. The PN turns into the FPN at gate closure. Even though it may not accurately reflect flows, NGESO use the FPN as a baseline to dispatch the asset and instruct the asset to move away from the FPN. One Workgroup Member commented that ESO are really more concerned about the delta provided and this is what they will aim to deliver. The FPN therefore is more a procedural process. They will concentrate on delivering the delta requested rather than adjusting between defined volumes, as in reality they don't have access to the real time Boundary Metering which would show if this requirement is being achieved.

NGESO confirmed that although theoretically the PN could be changed after Gate Closure, this did not happen in practice as the Maximum Export Limit (MEL) was used to effectively change the PN if the PN was not realistic. The Workgroup noted that ESO has access to data to forecast the expected output of a site, and this could be used to set the FPN for dispatch rather than rely on a potentially inaccurate PN.

A Workgroup member commented that historically many complex sites have been restricted from providing balancing services to NGESO on the basis that they are unable to accurately forecast the change to the volume at the Boundary Point. A member commented that it could be seen as unfair for end users to pay for balancing actions that have no impact on the Total System, as there was no clear benefit to the customer. It was noted that there may be occasions where the Total System will appear to not be affected by an action when looking at flows at the Boundary Meter, as the net effect of actions

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behind the Meter may not affect the Boundary Meter, but if the action had not been undertaken then the Total System would have been negatively impacted. This is important to consider when discussing assurance and independence of assets.

The Workgroup considered how FPNs would be calculated: If an SBMU contained one asset then it would be the FPN for that asset; if it contained numerous assets then it would be the sum of FPNs for those assets. The Workgroup noted that it was unclear what granularity of FPN data NGESO would receive. The NGESO representative noted that there was a desire for VLPs to provide GSP level services to aid with system constraints rather than just GSP Group actions. They noted that this wasn't progressed under P344 as it was unclear that aggregators would be able to deliver this.

Registration of Metering Systems

Existing process

LDSOs create the 13 digit Meter Point Administration Number (MPAN), and only Suppliers can register MPANs. The Workgroup noted that if new 13 digit MPANs were created under P375, there would need to be coordination with the Master Registration Agreement (MRA). Registering secondary pseudo-MPANs with 13 digit numbers would therefore be preferable so that future data flows are future proofed (for example to avoid longer digits and/or strings being truncated) as many current systems are designed to accommodate 13 digits and already do so for non-Settlement Meters.

Note - the original P375 terms of reference used the term 'pseudo MPANs'. As the solution was developed, this term ceased to be used and AMSIDs was developed. It is included here to illustrate the development of the P375 solution by the Workgroup.

This already seems to be common practice for operational non-BM or asset metering on sites. Once a Supplier is the Registrant of a Meter, it is the Supplier that then appoints a MOA and HHDC. This is a requirement under the current process but the Workgroup noted that this may be too onerous for operational Metering. There is already a complex process to ensure seamless data transfer and switching on the Data Transfer Network (DTN). It was noted that some features of the DTN are a good match for possible new pseudo-MPAN flows.

The Workgroup discussed whether the VLP would create the new pseudo-MPAN, and whether the pseudo MPAN should remain linked to the asset if a new VLP took responsibility. A Workgroup Member noted VLPs don't have MPIDs, and would need one to access DTN. Further, it was identified that the key difference between pseudo and normal MPAN is that the normal MPAN needs to be continually 'involved', recording energy use for each half hour all the time.

The Workgroup discussed whether pseudo-MPANs need to be 13 digit codes, can anything be done to link to them to the MPAN permanently. This is so the pseudo-MPANs do migrate across with a Change of Supplier at the Boundary Point and change of VLP control of the asset. It is possible that a repurpose of the Change of Supplier flow using the DTN could be used. There is a possibility of the DTN getting snarled up due to a disconnect between the pseudo and Supplier MPAN.

Pre-payment meters were discussed and the Workgroup re-affirmed their view that where prepayment meters are used, either at the boundary or as an asset meter, then the risk lies with the VLP and it should be part of their due diligence. It was discussed whether there should be an obligation on Suppliers to inform VLPs of pre-payment meters at the

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boundary and if their status changes or if thy shut-off mid Period. The Workgroup agreed that this is contrary to existing relationships between Suppliers and VLPS. They thought that the odds of their being an issue would be small, and even if it occurred, the impact on Settlement of one pre-payment meter (which would almost certainly be small in scale) stopping mid-Period would be negligible, if it was even noticed.

LDSO role

The Workgroup agreed that although the LDSO was responsible for identifying Boundary Metering, this is not a good match for the P375 solution, as they would have no involvement behind the Boundary Meter, as this would be between the customer and the VLP. A question arose around the anticipated split between DSO and LDSO. LDSOs do not currently actively manage their networks, and the P375 solution shouldn't limit the potential for DSOs to actively manage their network.

The Workgroup discussed whether the registration system is visible to the LDSOs. This could be done under a separate Modification so as not to create blockers, and so it was agreed to keep it out of scope. The Workgroup commented that there would need to be a process to transfer Meter Technical Details (MTDs) between VLPs and a process to deregister operational Metering. It requested that a consultation question should ask views on transferring pseudo MPAN's MTDs, in addition transferring between Secondary BM Units.

A Workgroup Member commented on LDSO charging which relates to things like final demand and residual charging, believing that the issues faced by storage providers using a generation licence would also be applicable to this Modification. They believed that a consultation question should be included to gain further information on this. They commented that as the solution focused on Secondary BM Units, it was inherently relating to Balancing Services. Another Workgroup Member commented that LDSOs recover their costs based on boundary Meter volumes, so they didn't think this was an issue for the Workgroup to consider

Link to Boundary Point Metering

The Workgroup discussed the need to link the operational Metering to the boundary Metering for the purposes of being able to adjust Metered volumes. It noted that there were other industry projects that may require the installation of operational Metering. The Workgroup particularly noted the Targeted Charging Review (TCR), CUSC Modifications CMP280/281, Final Consumption Levy, Multiple Suppliers P379, Electric Vehicles and domestic battery solutions. Although it was deemed outside the scope of this Modification by this Workgroup, they should be taken into account to avoid creating unintentional blockers and to ensure everything was heading in the same direction. For example when registering a Meter, information could also be voluntary provided in relation to the asset such as EV, Storage.

Asset meter register

The Workgroup considered who could create and maintain this new register of operational Meters. It could be the VLPs, DCs, or the SVAA or NGESO. The Workgroup agreed that SVAA was best placed to do this as there was already a well-established registration

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system in place. It was agreed that a qualified MOA should install and maintain the Meters, but that this could be a different MOA to the one appointed to the Boundary Meter.

It was discussed what data should be proved and how, between the VLPs and the SVAA for both the site and asset. It should include what voltage the operational Meter was connected at (to be able to apply a line loss factor), as well as the Boundary Meter MSID and the asset MSID. The VLP would need to provide information and data about the site for assurance for example site schematics/line diagrams. Questions arose whether this was a one off process or whether this should be periodically confirmed to provide continued assurance. It was noted that Elexon had developed a Self-Service Gateway under its Foundation Programme, and that the creation of new pseudo MPANs could be managed through this.

Transfer of registration

P375 should emulate the BSCP602 process for moving MSIDs between VLPs. We discussed if more time is needed for objections to be raised before the Effective from Settlement Date but this needs to be balanced against VLPs retaining customers unjustly. Given the limited chances of objections occurring, and there is a process in place if they do, there is no need to move away from the BSCP602 precedent.

The Workgroup agreed that clarification is required around how the SVAA should make determinations between where SBMUs are used for P344 Balancing services and P375 Balancing services. It was suggested that the determination remains in place until notified otherwise i.e. it will be for P375 until SVAA is notified otherwise – that is, VLPs will not need to notify each Settlement Period what the SBMU is being used for.

Sites and BM units in scope

The Workgroup identified that P375 related to Secondary BM Units which were not liable for credited energy. For example operational Metering could not be used within a Supplier BM Unit. Checks would need to be put in place to avoid a situation where two VLPs try to register the same operational Meter into their own Secondary BM Unit.

The Proposer asked the commercial relationship between VLPs and Suppliers and noted that sometimes there can be commercial tension or commercial opportunity between supplier and VLP, but that the site owner/operator/manager is best placed to give/have authority on Metering appointing MOAs and balancing decisions, and whether the VLP needs to let supplier know.

The Workgroup agreed in early meetings that domestic sites would be out of scope, but that any solution should not hinder or block operational Metering on domestic sites through the implementation of P375. However, as the solution developed, this changed so that there is now no restriction on domestic sites other than the limitations of the proposed CoP11 and P375.

The Workgroup agreed that more than one asset meter can be installed per site. Other site flows could be determined using a residual methodology which utilises asset metering installed. The Workgroup agreed that the assurance for this could be a declaration from the end customer along with proof of site load independence with line diagrams (as used by Central Volume Allocation (CVA) currently)

The Workgroup agreed:

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- Zero, one or many VLPs can use AMSIDs to Meter individual parts of the site
- Zero or one VLP can use the Boundary Point MSID Pair(s). Their Secondary BM Unit Demand Volume will be calculated using the Boundary Point MSID Pair(s), less any AMSIDs used by other VLPs, less zero or more other AMSIDs (representing assets that no VLP wants in their BM Unit)

The Workgroup were concerned when future proofing this modification against other change that we do not just allow VLPs to register AMSIDs. However, P375 will restrict the use of AMSIDs to SBMU's, as the P375 defect is only concerned with VLPs and SBMU's. When drafting legal text we will try to accommodate future change, but changes needed to accommodate AMSID's into Primary BM Unit's will likely be picked up by P379 and other modifications. However, any Party (e.g. Suppliers) can register to be a VLP in addition to their existing Party role(s) and take advantage of asset metering.

Primary BM Units and P375

P375 will not allow AMSIDs to be registered 'behind' Primary BM Units. Primary BM Units can be used for P344 purposes but there is nothing to stop Suppliers registering as a VLP role and registering AMSIDs as part of a SBMU.

There may be a need to register AMSIDs as part of a Primary BM Unit in the future but it is outside of the scope of P375 and does not address the P375 defect.

Asset meter definition

The Workgroup agreed that a clear definition of asset metering was needed and should include an aggregate of equipment and/or loads for logical grouping and despatch. The critical principle for an asset meter is that the equipment can be independently controlled and dispatched.

Communicating data

Communications will be via the DTN or 'by other electronic means as agreed' (e.g. the two companies involved agree to use P-Flows).

Alternative Meter Operator Agents

The arguments for and against having a suitably qualified MOA were:

- **For qualification** – Settlement integrity is paramount and while initial uptake may be relatively small and not have a huge impact on Settlement, the expectation is that within a few years this will not be the case
- **Against qualification** – P375 was raised to simplify market entry. Some companies installing Meters will not be traditional players in Settlement Metering so requiring them to Qualify could be seen as onerous.

Asset meter MOAs should be required to qualify but only to the extent required to be an AMSID MOA. They will only be qualified to provide MOA services for AMSIDs where they are not already a qualified MOA. This means that existing market participants will continue to provide services without having to endure potentially onerous BSC qualification.

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There was a suggestion for VLPs to be responsible for their MOAs in the same way that Suppliers are for theirs (Supplier Hub principle), but this was rejected as the Workgroup believe that asset MOA Qualification should emulate normal MOA Qualification as closely as possible.

Metering Standards

The Workgroup considered whether there would need to be a dispensation process for operational Metering and noted that many dispensations are due to not being able to put the Meter in the correct location currently judged on a case by case basis by the Imbalance Settlement Group (ISG) and / or SVG.

A Workgroup Member commented that balancing services are done with active power and so questioned the need to keep reactive standards mentioned in the Codes of Practice (CoPs). Elexon noted that there were reactive power markets in other countries and these shouldn't be excluded when deciding the standards for the P375 solution to ensure the solution is futureproofed. The Proposer noted Measurement Transformers can be commissioned using a range of techniques, including injection and prevailing load. A Member was concerned that using primary injection on existing sites would be problematic, as it would require a site shut down. Elexon confirmed that primary injection is typically used on new high voltage sites prior to energisation.

Elexon commented that because of the legal definition of a Supply Meter, some EV charging sites were registered as Unmetered Supplies (UMS), but considered that if the data was accurate it should be used. The Workgroup agreed that the solution should accommodate and future proof governance around EV Meters and assets, and this should be considered in the redlining. It was noted that schedule 7 of the electricity act wouldn't apply as the Meters used for the P375 solution would not be for Supply.

A Workgroup Member thought the same accuracy standards should be maintained for operational Metering, but that removing the requirements for storage, communications, and display would reduce the cost, commenting that storage requirements can increase the cost of Meters. A Member commented that there would be incentive for VLPs to ensure Metering was functional as they would not be paid for any services if the relevant Meters were broken or communications were down. The Workgroup decided to investigate standards for Metering available and used, through impact assessment or consultation. The Workgroup agreed that standards for Metering under P375 should sit in a new document, and Elexon agreed to create a straw man document to consult on. The Workgroup noted the desire to do this sooner rather than later so that industry could be aware of what standards would likely be required under P375.

A Member questioned whether it would be possible to revert back to the boundary if the P375 asset meter became broken or problems with the communications. Elexon commented that it would be unlikely to be able to use the Boundary Meter to determine delivery, as the P375 issue is that you can't use the Boundary Meter due to uncontrolled assets behind the Boundary Meter. However, if the operational Meter was down, the VLP would be treated as not having delivered, and so would be strongly incentivised to rectify an issue or fault as soon as possible.

That there should be a size threshold for appointment of MOAs: where the capacity of the circuit that is being Metered would require CoP3 Metering (broadly used by Industrial and Commercial (I&C) sites).

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For sites where the capacity of the circuit that is being metered would require CoP3 Metering and above, the VLP can choose to be the MOA (by completing BSCP537) or appoint a MOA.

Where the capacity of the circuit that is being metered is below CoP3 a MOA need not be appointed, and that VLPs can subcontract technical services.

In this case any Metering (or Metering System) would need to be CoP11 compliant, and there would need to be a qualification process for the use of these technical services set out in a BSCP (to be discussed at a future Workgroup meeting).

That the functionality of this 'asset meter MOA' should be defined in the BSC. This would be different to that as defined by supplier hub, which could be perceived as a barrier to entry (i.e. does not have to be a traditional MOA).

That the Modification can be future-proofed by including recognised standards (e.g. IEC, CE) in the new CoP11, and the minimum requirements of functionality for the new Meters or Metering systems being approved in BSCP601.

That the VLP is ultimately responsible for passing on data into Settlement.

The Workgroup discussed the new Code of Practice that has been developed as part of the P375 solution. Iain Nicoll stepped the meeting through the key points as per the meeting slides.

A question was asked whether we need to differentiate between Active and Reactive energy and whether there is a need to report the latter. It was agreed that, based on how energy is measured elsewhere for Settlement purposes, there is no need to measure Reactive energy.

We discussed the provisions around security measures. There is a wider BSC matter around security measures and P375 is not the forum to resolve them and Elexon is looking into them elsewhere. For the purposes of P375, it was agreed that wording should be something along the lines of 'appropriately secure'

The Workgroup discussed inverters and whether they should be considered in terms of Meter locations. It was discussed that while it is possible to measure Direct Current (DC) flow and convert into an Alternate Current (AC) equivalent rate i.e. the amount of energy that effects Balancing and/or Settlement, this wasn't particularly easy from a technical point of view and probably wouldn't be needed. It was agreed that inverters is more of an issue for storage devices rather than Electric Vehicles. It was agreed to include this in the Assessment phase consultation – in response to the consultation, rectifiers was also added to CoP11.

Discussion on Consultation responses

One response to the Assessment Phase consultation called for the definition of import and export used in CoP11 to replicate that used in CoP9, or elsewhere in the BSC. Elexon explained that the definition used in CoP9 is not relevant to CoP 11 as they are dealing with different types of metering. Further, in drafting the proposed legal text, Elexon were very careful not to do anything that would have required changing the definition of Import and Export within the BSC as they are fundamental building blocks for the BSC. Being mindful of this, the draft legal text has even gone so far as to create new definitions for asset metering to describe the specific circumstances for asset meters. The Workgroup agreed with this and that no further action was required.

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As part of the discussion around import and export, ramp rates were also discussed and how they may affect final reads, and as such final charges. It was mentioned by Workgroup Members that this was discussed during P344 and that there are still some outstanding issues here. However, it is more a concern with Grid Code and outside of the remit for P375.

One consultation response made reference to the fact that CoP11 meters shouldn't be assumed to be suitable for other purposes, e.g. Balancing Services/Ancillary Services. The Workgroup agreed with this, but much like SMETS compliant meters, if an asset meter is manufactured so that it meets CoP11 standards as well as the standards for other purposes, then there is no reason why it shouldn't be used for other roles.

One consultation response raised questions around second-by-second metering. Elexon explained that there is precedent of accrediting such metering and as long as it is compliant with CoP11 and BSCP601, there shouldn't be a problem. The Workgroup agreed that no further action is therefore required.

It was suggested that CoP11 should consider the Measurements Instruments Directive (MID). Elexon informed the Workgroup that they had discussed CoP11 with BEIS and as far as BEIS are concerned there is no need for cross-reference or alignment as the MID is concerned with billing, and P375 is not. The workgroup agreed that no further action is required.

The workgroup discussed retrospective accreditation and it was agreed that it should not be permitted. For example, if a VLP has a CoP11 meter, but they want to use it for CoP3 purposes, then the meter would have to go through the CoP3 approval process.

A question was asked about who will be responsible for the maintenance of the meter. The Workgroup agreed that this would sit with the VLP and should an asset meter fail, then the customer should liaise with the VLP and not the Supplier.

Whether a meter is a measurement transformer or not was discussed as a suitable means of differentiating which protocol route should be followed. It was discussed that CT meters generally tend to create more issued that non-CT meters, hence the suggestion in the consultation response. The Workgroup recognised this, but are happy with existing proposals and do not think any changes need to be made.

Losses

The Workgroup considered how line losses should be accounted for. The P375 Proposer noted that the Issue 70 'Settlement of Secondary BM Units using metering at the asset' group thought this could be linked to the voltage of the Meter. Elexon noted that when calculating non Delivered volumes it uses actual Settlement Metered data. This Metered data will include losses up until the GSP Group. If the FPN is calculated based on flows at the Boundary or at the Operational Meter and is not adjusted for losses then there will always be a difference between actual Metered data used for Settlement and Expected flows (which equals FPN plus Accepted Volumes) if the FPN and Accepted volumes do not take losses into account. Elexon committed to provide further examples at the next workgroup to illustrate this further.

The Workgroup decided that it should consider the role of agents and the need for registration flows in its next meeting, and consider where any Baseline Methodology would best sit under the BSC as well as associated charging. The Workgroup considered that as the Modifications were similar and the membership was almost the same, Elexon should

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continue to try and combine Workgroups for the two Modifications and noted that this would mean having more frequent Workgroups to ensure things were fully considered.

The Workgroup agreed that it would be appropriate to use the LDSO calculated Line Loss Factors for BSC Settlement Meters for operational Meters. The relevant Line Loss Factor (LLF) would be applied based on the voltage difference. This would keep the solution simple by using the existing values, and the Workgroup did not believe that the distance from the operational Meter to the boundary would need to be considered. The Workgroup decided that the VLP would need to declare LLF for each pseudo MPAN, but questioned how unusual voltage configurations could be handled. Elexon confirmed it would use the LLF that was the best fit and also noted this approach is used for private wire arrangements in the Contracts for Difference scheme.

The Workgroup agreed that SVAA will apply the Boundary Meter LDSO LLFs according the voltages used by referencing the asset and Boundary Meter. The default position will be to use Generic LLFs, but Site Specific LLFs could be used if required. Furthermore, it was discussed that CoP11 will allow for Meters to apply corrections to the reading, or for them to be done as part of aggregation process – this is consistent with existing processes and will allow for the very few rare occasions where Generic LLF may not be used.

Performance Assurance

The Workgroup noted Elexon's suggestions that appropriate Assurance techniques should include Technical Assurance of Metering (TAM), BSC Audit, and Material Error Monitoring. They commented that there should be an automated technique using statistical methods to identify gaming. Further, they recognised that it is the PAB's role to direct assurance as they see fit and it will be up to the PAB to determine if asset metering should be included in their assurance priorities.

The Workgroup considered who would be best placed to provide assurance for any solution. One Member commented that this could be best achieved under the Grid Code rather than BSC as ESO need to be confident that the delivered volumes are accurate. ESO commented that it believed assurance should be a BSC process. The Workgroup questioned what sanctions could be applied to non-compliance. It also commented that there would need to be a robust definition for independence of control and site configuration, so that sanctions could be appropriately applied.

In response to a consultation response, the workgroup discussed and agreed that HHDCs will have to go through a similar approval process as they do now to show that they are able to operate with asset meters.

It was discussed post-consultation that there is a possibility that new Settlement Risks may be identified while drafting CSDs. It was agreed that the PAB should be engaged during the Implementation Phase.

Appointment of Agents

The first AMSID Registrant will appoint Agents. We discussed if some technologies would be able to switch from one Agent to another. There was concern over how to deal with proprietary software and if this could be a cause for Switching objection but, BSCP601 requires that Metering Systems should be able to be switched. This is a wider issue outside of the remit of P375 and should not be considered by the P375 Workgroup.

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Some of the consultation responses raised questions about the asset MOA. It was agreed by the Workgroup that there is no need for the MOA appointed to the asset meter to be the same MOA appointed to the Boundary Point Meter. Similarly the Boundary Point HHDC and asset meter needn't be the same HHDC. The reason for the confusion is that where SVA metering shares a boundary point, it is normal to share Party Agents so as to remove any concerns around differencing. However, for assets the SVAA will carry out the necessary calculations for differencing, and all the MOA and HHDC will be required to do is provide data to the SVAA – they will not be required to do any calculations themselves or share data with each other.

One of the Workgroup attendees asked whether it would be the VLP or the HHDC that collects data. It was reiterated the HHDC will collect data, but this will be on behalf of the VLP who will retain ultimate responsibility.

During discussions around agent appointments and the additional work needed during the Implementation Phase to draft CSDs, it was agreed that while emulation is good, there will be times where separation is better and the Industry expert group(s) that will form should be mindful of this and replicate existing process tweaked for P375.

Differencing

The Workgroup agreed that a 'metering by difference' approach (which is distinct from 'difference metering' and 'net metering') should be incorporated into the P375 solution. This will work for site configurations where an asset without a Meter uses Metered data from other Meters on the site to determine its volumes.

Interaction with existing Metering Standards

During engagement over the Report Phase Consultation, Ofgem requested additional information as to why the Workgroup had not required Asset Meters to be meet the MID or SMETS specifications. As such, we have included this further clarification.

Measurement Instrument Directive (MID) EN 50470-3:2006 is reliant on International Electrotechnical Commission (IEC) standards 62052-11:2003 and IEC 62052-31:2005, and is related to the IEC 62053-2*X* series (i.e. numerical class accuracy standards such as 0.5s, 1 and 2). The IEC 62053-2*X* series is related to billing of active energy and reactive energy. CoP11 is related to balancing rather than billing; it applies equivalent accuracy requirements as the IEC 62053-2*X* series. The MID is for Active electrical energy Meters and CoP11 will allow the use of Active electrical power Meters that are used for monitoring, control and balancing of electrical networks (where the conversion to energy proposed under CoP11 is done external to the Metering device by a software control system). The IEC has standards for Power and Energy Meters, e.g. IEC 61557-12, which are used as operational meters, and they have equivalent accuracy classes to the IEC 62053-2*X* series and MID equivalent (i.e. A, B and C). There are sites where it is not practical to fit an Active Energy billing meter, for example due to space limitations at the asset, and avoiding installation of a billing meter separate to the instrumentation operational meter – this was the driver to include operational metering as one of the three metering options permissible under P375.

The Workgroup considered where behind the Boundary Point Metering solutions are already used while considering the proposed P375 solution. The Capacity Market (CM)

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Rules allow the use of billing metering and operational Metering. It is allowed as a Bespoke Metering Configuration Solution (Schedule 7 of the CM Rules) that relies on meeting the required accuracy classes and the Balancing Services Metering Configuration Solution. The Balancing Services Metering configuration solution relies on meeting the required accuracy class of the relevant Balancing Services agreement (i.e. frequency control by demand management, firm frequency response and Short Term Operating Reserve) specified by NGESO. Balancing Services Agreements are also used by NGESO to balance the Total System. NGESO also has Operational Metering requirements for systems used to provide instantaneous indications from BM Units. These metering systems use equivalent accuracy classes to those required by the relevant CoP, and can be provided by non-billing meters such as those manufactured to IEC 61557-12 – which is specified in CoP11.

The P375 solution will be used for balancing rather than billing, so CoP11 is based around what has been considered as good industry practice for balancing requirements in other schemes. The CM Rules, and the metering options allowed by those Rules, are approved by Ofgem and BEIS; it was therefore concluded that requiring asset meters to comply with the MID was not needed for the purpose of providing metering data for Balancing. Further, it was considered that requiring compliance could be a barrier to entry for any site with physical restrictions, and could in turn limit participation in the BM.

An Embedded Metering Device is a Meter that measures Active Power and/or Active Energy, which is embedded within equipment used for other purposes e.g. an EV charging unit or a small scale domestic battery storage unit, and is not a dedicated meter i.e. one whose primary purpose is to measure Active Power and/or Active Energy. For the third metering type the same principle of equivalent accuracy classes was applied. As these smaller demand circuits will aggregate potentially hundreds or thousands of circuits into a SBMU, the requirement to fit a billing meter or an Operational Meter external to the device would be impractical and cost prohibitive, and would effectively exclude participation of street furniture such as EV charging units from being able to participate in the BM.

There is nothing preventing a SMETS meter, or linked device, being used under P375. Meters that comply with SMETS aren't required to go through the BSCP601 compliance or protocol approval testing for use as a Boundary Point Metering System. If a VLP chooses to use a SMETS meter as an asset meter there would be no Compliance testing required. Testing would be dependent on whether the DCC would be able to collect and submit data into Settlement, or whether the VLP wanted to do it themselves. In the latter case a Protocol test would be required on the VLP. Using a SMETS meter as an asset meter could potentially be cost prohibitive, but there is nothing to stop a VLP from choosing that option if they believe it could be commercially viable. Should a VLP wish to use any device linked to the communications hub as an asset meter, it would be dependent on whether the DCC had approved that device as to whether a Compliance Test is required. The same principles for Protocol testing would apply depending on the involvement of the DCC. Nothing in P375 should prevent a VLP using a device aligned with SMETS.

Standards are catching up with the changing landscape of technology and products. One of the areas the MID wants to expand into is DC metering but there is currently no IEC standard for a DC Meter. One is in development (IEC 62053-41) with an expected publication date of summer 2021. Similarly, for an Embedded Metering Device within equipment used for 'other' purposes there is no IEC standard. This has been identified as an area that requires standardisation and is being looked into, but neither Elexon nor Workgroup Members are aware of any planned implementation date for such a standard. CoP11 seeks to address this gap until a relevant IEC standard is implemented, at which

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point Elexon will raise a Change Proposal to update CoP11 accordingly. Elexon is a member of the BSI PEL/013 Electricity Meters (and the equivalent for IEC) workgroup and will monitor updates to standards through this forum.

One area where P375 will improve on the CM Rules and Balancing Services Agreements is to mitigate risk. This is will be done by the amendments to BSCP601, which will require any asset meter (one that hasn't been approved under an existing CoP) to undergo Compliance testing for approval to be used for a particular asset metering type(s) under CoP11. This will confirm the accuracy requirements are met and the parallel process of Protocol approval will confirm that accurate data will be submitted into Settlement.

Meters used for billing are generally approved under the MID, but for Meters outside the scope of the MID they must be approved by the Office for Product Safety & Standards under national legislation. During the Assessment Phase Elexon (on behalf of the Workgroup) met with the Office for Product Safety and Standards to discuss P375. They were interested in CoP11, and whether it would be used for billing, but as already mentioned, P375 will not be used for billing. Should CoP11 form part of the P379 solution, then CoP11 compliant meters may be used for billing. If this will be the case, then any asset meter used for P379 would be subject to BSCP601, and this refers to the approval of a given meter types' pattern or construction under Schedule 7 of the Electricity Act 1989 and supporting regulations, where used for billing. If P379 was to use CoP11, the use of asset metering types would be restricted to asset meters that satisfy the Type Approval criteria. This update to CoP11 would be done as part of the P379 Modification.

The Workgroup and Elexon are aware that the government are considering making SMETS metering the default for all meters i.e. there will be no more AMRs or non-Half Hourly Meters (this ties in with proposals for market-wide Half-Hourly Settlement). There are no formal proposals yet for universal SMETS metering roll-out, but Elexon will make the necessary changes to CoP11 and other documents as soon as the roll-out schedule is known. If users are interested in using the SMETS communications hub as a conduit to access the P375 solution, Elexon would have to work with the DCC to determine if there are any gaps in compliance procedures and what (if any) updates to relevant BSCPs would be required. Similarly, we will raise changes as required to facilitate market-wide Half-Hourly Settlement so that they are implemented to the required timescale. This is a well-trodden path for Elexon and the BSC, so there is no concern that changes may not occur in a timely manner.

Impact assessments

Elexon explained that the Impact Assessment form CGI has given an initial estimate of £1.6m to £2m to implement over 50 – 60 weeks. This is very much an initial estimate and is subject to change.

Elexon went on to explain that this is commensurate with other changes of a similar nature such as P344 and P354.

Cost Benefit Analysis

Elexon explained that, given the amount involved, precedence suggests that the Workgroup should make a case for why the cost is justified. The Workgroup agreed that reference should be to the following points in the Assessment consultation and Report:

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- Facilitation of P379 (multiple Suppliers), P383 (aggregation of demand for complex storage Sites) and P395 (final demand on-site)
- Facilitates uptake of Flexible assets, including Electric Vehicles, batteries and heat pumps
- Transition to DSOs – DSOs will have better understanding of capacity within their networks
- Potentially, wholesale market access for aggregators
- Carbon capture that could be enabled – we should try and estimate potential benefit, particular in relation to use of smart Meters and encouraging use of EVs and heat pumps
- Will add to the 'big data' available – we discussed P398 and how that too will enable big data. It was agreed that P375 should not 'do' anymore and follow the P344 precedence in terms of data sharing.
- Will facilitate aggregators being able to enter the wholesale market
- P375 will be able to make use of smart Meters and their data in respect of aggregation and as such, will add value, and be a validation/realisation to the smart Meter programme

It was agreed that we should avoid 'double counting' benefits i.e. they should only be logged as a benefit for the primary beneficiary.

It was agreed that P375 would be a facilitator for other changes across the industry and this should be drawn out but not necessarily counted as a 'benefit' as each of these individual initiatives have their own 'benefits' already identified and this could lead to a double counting of benefits.

The workgroup discussed responses to the question asked regarding potential benefits. They were pleased to see that no one disagreed with their potential benefits. Further, they noted that one respondent highlighted that similar arrangements already exist in France and if GB follows the same path, P375 could facilitate aggregators' entry into the Wholesale market at a later stage.

Assessment Phase Consultation

The workgroup discussed whether the P375 Assessment Phase consultation should be extended beyond the proposed standard three weeks.

The proposer's concern is that any delay to the Modification process will delay the roll-out of CoP11 and increase the risk of there being 'stranded assets' i.e. Meters that are of no use following the implementation of P375. Furthermore, they were of the opinion that three weeks is more than sufficient time to liaise with colleagues internally and discuss a response.

On the other hand, it was represented that given the enormity of what we are proposing, particularly as it is ground-breaking and will apply to people who may not have a great base-knowledge of the BSC, three weeks may not be long enough to understand the concept and respond.

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It was suggested that the VLPs that will be impacted, may need more than three weeks to identify what changes will be required to the their systems to comply with P375; but this was countered with the fact that the use of the P375 solution will be voluntary and implement necessary changes to internal systems will be a commercial and business decision.

We also discussed that P375 is one of a number of potentially complex BSC Modifications due to have implementation work start in 2021 and its final implementation date could be subject to change. The P375 Workgroup were absolutely dead-set against this and one even suggested that as part of the Assessment Phase consultation, we should seek views on how likely P375 is likely to be taken up and how that take-up will be relative to other large scale recent/upcoming changes such as TERRE and MARI. The workgroup thought this would be a good idea, with one member suggesting that their anecdotal evidence to date being that P375 is highly anticipated and VLPs would be more likely to participate in P375 than other products i.e. TERRE or MARI.

Following discussion, the Workgroup agreed that the three week Assessment Phase consultation should remain and acknowledged that should a respondent not be able to respond in time, their response may still be considered by the Workgroup and/or BSC Panel, dependant on when it is submitted and that there would be an opportunity to submit views as part of the Report Phase consultation.

Draft Legal text

The Workgroup discussed how the formulas in BSC Section S-2 have been derived and folded into the BSC.

Section S-2 General

SVAA receives aggregated consumption figures in accordance with BSC Section S-2 paragraph 3.1. However, for P344 the SVAA requires disaggregated consumption figures per MSID Pair. This mean that the HHDA's are therefore instructed under P344 to send MSID standing data to SVAA for relevant Boundary Meters.

For P375 the SVAA will receive disaggregated data from the HHDC for asset metering Systems. However, the SVAA will need to perform the role of the HHDA to turn the data received from HHDCs into the equivalent of what they receive from HHDAs.

Suppliers ensure HHDCs enter Meter Register Consumption into the relevant systems (SMRC) and then turn this into Metering System Metered Consumptions (SMMC). The equivalent needs to be done by HHDCs for asset metering systems who will now send the equivalent data, which is normally sent to HHDAs, but will be sent to the SVAA instead.

BSC Section S-2 paragraph 3.3.2A, and paragraph 3.5.1A (which creates AMRC), which is turned into the equivalent of SMMC for asset metering systems in paragraph 3.5.3A AMMC.

HHDAs will turn the Metering System Metered Consumptions (SMMC) received from HHDCs into Allocated Metering System Metered Consumption (AVMMC) by assigning a GSP Group, Line Loss Factor and Consumption Component Class to the data.

For asset metering systems, the SVAA will undertake this role and turn the AMMC into the equivalent of AVMMC for Boundary Meters by assigning a GSP Group, Line Loss Factor and

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Consumption Component Class to the data to AMMC; turning this into AAVMMC – this will be covered by BSC Section S-2 paragraph 3.9.2A

Note: To create a CCC, SVAA will need to know a Measurement Class.

The SVAA has so far performed a role similar to the HHDA for this new data. We now start mirroring a lot of the existing processes as this is the point, where the SVAA will receive this data from HHDAs for Boundary Meters.

In BSC Section S-2 paragraph 7.1.1B, the Allocated Metering System Metered Consumption is turned into Metering System Metered Consumption VMMC HZaNLKj i) by dividing the data by 1000.

The same therefore has to be done with the new Allocated Asset Metering System Metered Consumption creating a new paragraph - this will be paragraph 7.1.1B.

Both the Metering System Metered Consumption's VMMC are then allocated to the SBMUs. These will have slightly different subscripts for the Asset Metering Systems in paragraph 7.1.1C.

Secondary Half Hourly Consumption (Non Losses)

The SVAA shall determine the Secondary Half Hourly Consumption (Non Losses) (V_{i2Nj}) in paragraph 7.1.4.

- $V_{i2Nj} = \sum_{aK}$ (A) $VBMMC_{i2aNLKji}$ + (B) $\sum_{aK}{}^{NonDiff}$ $VBMMC_{i2NLKj}$ - (C) $\sum_{aK}{}^{Diff}$ $VBMMC_{i2NLKj}$

The '$VBMMC_{i2NLKj}$' from asset metering systems now feeds into the existing equation.

Within the SBMU, consumption values come from asset metering systems, which have been allocated like any other Metering System. However, there are asset metering systems allocated to the SBMU for the purposes of Differencing.

Boundary Meters volumes selected for Differencing will be included in the existing (A), and asset Metering Systems selected for Differencing within the new '$VBMMC_{i2NLKj}$'.

By deducting the asset metering systems selected for Differencing but leaving the volumes for the Boundary Meters selected for Differencing, the 'difference' between the two values creates the correct values for the Differencing AMSID i.e. Boundary has flows of 10, all other AMSIDs have flows of 6, the differencing AMSID has flows of 4 included in the consumption volumes.

Secondary Half Hourly Consumption (Losses)

The SVAA shall determine the Secondary Half Hourly Consumption (Losses) – $VLOSS_{i2Nj}$.

- $VLOSS_{i2Nj} = S^{(vv)}{}_{LK}$ $((LLF_{Lj} - 1) * VBMMC_{i2aNLKji})$ + $S^{(vv)}{}_{LK}$ $((LLF_{Lj} - 1) * VBMMC_{i2NLKj}{}^{NonDiff}$ - $S^{(vv)}{}_{LK}$ $((LLF_{Lj} - 1) * VBMMC_{i2NLKj}{}^{Diff})$

Similar to what happens for Non Losses, the losses for differencing have to take account of differencing which is done in paragraph 7.2.4.

Now we have fed the asset metering systems volumes into the Settlement process and calculated V_{i2Nj} and $VLOSS_{i2Nj}$, taking account of Differencing, the process continues as normal.

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The next process adjusted in S-2 is the calculation of Delivered Volumes.

Determination of Metering System Delivered Volumes

Paragraph 3.10 will deal with Delivered Volumes.

The VLP now needs to send in Delivered Volumes for AMSID Pairs adjusted to take account of Losses between the AMSID and the Associated MSID Pairs 3.10.1A.

As there may be a number of VLPs operating behind the same Meter, the Delivered Volumes for an Associated MSID Pair needs to be totalled – this will be in the paragraph 3.10.1B.

These new Total Delivered Volumes feed into the allocation of delivered volumes in paragraphs 3.10.3 and 3.10.4.

As noted earlier, there may be a number of VLPs operating behind a Boundary Meter. Therefore, the calculated Delivered Volumes above may need to be allocated to each VLP based on their contribution – this will be covered in paragraph 3.10.4A.

Potential Alternative Modification

One Assessment Phase consultation respondent suggested that the P375 solution should be based around BSP550 'Shared SVA Meter Arrangement of Half Hourly Import and Export Active Energy'. It was discussed though that BSCP550 is not relevant to P375 as it is concerned with SVA Boundary Metering and is more concerned with special arrangements for permanent arrangements on a site, rather than assets, which by their nature could change within a sites configuration.

Implementation phase drafting of CSDs

During the final Workgroup meeting post-consultation a recurring theme was the need for further detail. It was acknowledged that respondents recognise that this will happen during the implementation phase. Some respondents stated that they would not know what their implementation time would be until they see the details of the CSDs.

Elexon will be holding industry expert groups through the first quarter of 2021 to discuss, review and finalise the relevant CSDs to ensure they are fit for purpose and to allow industry to feed in their requirements.

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7 Workgroup's Conclusions

The workgroup agreed unanimously that P375 should be implemented.

Applicable BSC objectives

P375 will be **positive** for **Applicable BSC Objective (b).** P375 will increase the options for RR providers to come to market, so will allow NGESO more options for the efficient, economic and coordinated operation of the National Electricity Transmission System. One Workgroup member added that it would provide greater confidence and continuity for NGESO as they will have increased visibility of what is happening beneath the Boundary Point.

P375 will be **positive** for **Applicable BSC Objective (c)** because allowing more providers to come to market as an inherent positive effect on competition.

P375 will give further opportunities for Aggregators to enter the market, so is in line with the EBGL's principles and objectives. As such is **positive** for **Applicable BSC Objective (e)**. One Workgroup member believed that there is a mildly positive effect as it is in the spirit of the EBGL, but not directly related. Another was neutral as they believe there is no direct link between P375 and the EBGL.

P375 will make Settlement more efficient as there will be greater granularity and determination of Balancing responsibility. However, the P375 solution, include the complexity of changes to BSC Section S and BSC Section S, Annex S-2, will make settlement calculations more complicated; as such, P375 is **neutral** for **Applicable BSC Objective (d)**.

The Proposer and Workgroup were neutral about all other Applicable BSC Objectives.

Does P375 better facilitate the Applicable BSC Objectives?		
Obj	Proposer's Views	Other Workgroup Members' Views[4]
(a)	• Neutral	• Unanimous agreement with Proposer
(b)	• **Positive**	• Unanimous agreement with Proposer
(c)	• **Positive**	• Unanimous agreement with Proposer
(d)	• Neutral	• Unanimous agreement with Proposer
(e)	• **Positive**	• Majority with Proposer - one member thought this was neutral
(f)	• Neutral	• Unanimous agreement with Proposer
(g)	• Neutral	• Unanimous agreement with Proposer

Self-Governance

Given the impact on the market and competition, and the potential to contribute to wider change, the Proposer and Workgroup unanimously agreed that P375 should not be a Self-Governance Modification, with one adding that P375 will change the 'normal state' and the concept of how the market could operate. Further, because P375 impacts EBGL Article 18 balancing terms and conditions it must be submitted to Ofgem for decision.

[4] Shows the different views expressed by the other Workgroup members – not all members necessarily agree with all of these views.

What are the Applicable BSC Objectives?

(a) The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence

(b) The efficient, economic and co-ordinated operation of the National Electricity Transmission System

(c) Promoting effective competition in the generation and supply of electricity and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity

(d) Promoting efficiency in the implementation of the balancing and settlement arrangements

(e) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency [for the Co-operation of Energy Regulators]

(f) Implementing and administrating the arrangements for the operation of contracts for difference and arrangements that facilitate the operation of a capacity market pursuant to EMR legislation

(g) Compliance with the Transmission Losses Principle

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Consultation question and responses

The questions asked by the Workgroup for this area, and a summary of responses are below. The Workgroup's discussion pertaining to these questions is in Section Six.

P375 Workgroup Terms of reference

The Proposer and all Workgroup members agreed that the Workgroup Terms of Reference have been met.

What are the Self-Governance criteria?

A proposal that, if implemented:

a) is unlikely to have a material effect on:

i. existing or future electricity consumers; and

ii. competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution, or supply of electricity; and

iii. the operation of the national electricity transmission system; and

iv. matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies; and

v. the Code's governance procedures or modification procedures, and

b) is unlikely to discriminate between different classes of Parties

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Cost Benefit Analysis

A Panel Member noted the distribution of costs versus distribution of benefits. He suggested that including a high level of summary to the Modification Report of what is driving the proposed benefits and what the assumptions are behind those benefits would be useful [see section four].

Implementation Date

Elexon highlighted to the BSC Panel that since the Workgroup's discussion, Elexon has had confirmation from their Service Provider that an Implementation Date of 24 February 2022 is highly unlikely to be achievable given other development activity due at the same time. Elexon therefore suggested that the BSC Panel should not recommend to the Authority an Implementation Date of 24 February 2022 if the Authority's decision is received on or before 29 January 2021 as recommended by the Workgroup.

Elexon added, as a side-benefit, this would give more time to draft CSDs with the Industry Expert Group next year. Given the complexity, drafting could take up to six months and a couple of assessment phase consultation respondents indicated that they would need six to nine months implementation time once the CSD drafting is complete.

The Panel was conscious that not recommending an Implementation Date in February 2022 was inconsistent with the Workgroup's recommendation. However, the Panel agreed that not recommending 24 February 2022 as an Implementation Date was the most pragmatic approach given that new information received since the Workgroup made its recommendations.

The P375 Proposer commented that the early delivery of CoP11 is of upmost importance to the industry and if the BSC System Changes were later than originally hoped, then they could accept the delay. Elexon briefed the Panel and the Proposer that if the BSC Panel's views do not change, and they approve CoP11 (as well as BSCP601 and BSCP602) for implementation at their meeting on 10 December 2020, then they only way these documents can be changed is if someone were to raise a BSC Change. This would essentially 'lock-in' the proposed changes/new CoP11 while pending implementation, thus providing the required certainty for industry, subject to Ofgem approving P375.

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9 Report Phase Consultation Responses

This section summarises the responses to the Panel's Report Phase Consultation on its initial recommendations. You can find the full responses in Attachment E.

Summary of P375 Report Phase Consultation Responses

Question	Yes	No	Neutral/ No Comment	Other
Do you agree with the Panel's initial unanimous recommendation that P375 should be approved?	6	0	0	0
Do you agree with the Panel that the redlined changes to the BSC in Attachment A, and CSDs in Attachments B-D deliver the intention of P375?	5	0	0	1
Do you agree with the Panel's recommended Implementation Date?	5	1	0	0
Do you agree with the Panel's initial view that P375 should not be treated as a Self-Governance Modification?	6	0	0	0
Do you agree with the Panel's initial view that P375 does impact the EBGL Article 18 terms and conditions related to balancing held within the BSC?	6	0	0	0
Do you have any comments on the impact of P375 on the EBGL objectives?	3	3	0	0
Do you have any further comments on P375?	4	2	0	0

Consultation respondents' views on Proposed Modification

The P375 report Phase Consultation received six responses. Respondents represented Suppliers, Supplier Agents (HHDC/DA, HHDA, NHHDC/NHHDA, NHHMO/HHMO), a VLP, a Generator and a trade body representing over 150 members (including Suppliers, Virtual Lead Parties, Aggregators and Generators). All six respondents previously responded to the Assessment Consultation. We also contacted some of those that responded to the Assessment Consultation but not to the Report Phase Consultation. All of those we spoke to confirmed their views remained unchanged

Applicable Objectives

The respondents unanimously agreed that P375 should be approved. Not all respondents gave views against the Objectives, but those that did agreed that P375 would better facilitate (b), (c) and (e) as it will improve competition by removing barriers to effective participation by distributed generation.

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Redlined changes

The majority of respondents agreed that the redlining changes to the BSC deliver the intention of P375. One respondent noted that, whilst they agree that as far as they are currently drafted the amendments are not at odds with the intentions of P375, the Business Requirement detail is still lacking in relation to the CSDs that are yet to be drafted. They suggested that any outputs of the industry expert groups concerned with drafting the CSDs in 2021 should be shared with the Workgroup and any other interested parties as implementation is considered. Elexon note that it is the plan to share the developed CSDs with the Workgroup and invite Members to the workshops in early 2021.

Elexon also note that the Workgroup preference was to develop the remaining CSDs in the implementation phase as this would enable an earlier delivery date, whilst allowing sufficient time to develop the CSDs in the implementation phase. Alternatively, the CSDs would have had to be developed in the Assessment Phase, adding three to six months to the progression timeline.

Implementation Date

The majority of respondents agreed with the Panel's recommended implementation date of June 2022 as part of the June BSC Release. One respondent highlighted their concern at the delay in implementation from February 2022 to June due to central system development. They note that the targeting of SVAA to deliver a majority of the data processing requirements of P375 could be seen as problematic. They suggest instead targeting the majority of consumption data preparation and processing related activities at the HHDC Agent, arguing it would cut implementation lead times and costs. However, the respondent emphasised that they were not suggesting the P375 solution be amended to accommodate these suggestions, but rather they should be considered moving forward as several Modifications have overlap with P375 (e.g. P376, P379 etc.).

As mentioned in Section 6, the Workgroup were keen to emulate existing processes as much as possible i.e. that Balancing Responsibility –arrived at by consolidation of multiple Meter inputs, potentially from several BSC Party Agents (HHDA/HHDC/VLP Agent) – should be determined by the SVAA. The SVAA provides a holistic view of all relevant data provided by the SVAA and it maintains the industry expectation that BSCCo and its Agents perform all Settlement calculations. This also ties in with the P344 solution, and the issue P375 looks to resolve is directly related to P344. Any benefits of changing the solution to focus on the HHDC would require an SPIA to confirm and, in the event that this was the case, it would result in two different processes for what is a similar application. This could lead to ambiguity and confusion among market participants in the future, in contrast with the Workgroup's aims of emulating existing processes for ease of understanding.

Self-Governance

All respondents agreed that P375 should not be treated as a Self-Governance Modification as it impacts competition and the EBGL Article 18 terms and conditions related to balancing.

EBGL Impacts

All respondents agreed with the Panel's view that P375 does impact the EBGL Article 18 terms and conditions held within the BSC. Not all commented on the impacts on the EBGL

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objectives, but those that did noted that P375 either had a positive impact or were consistent with them.

Data Communications

A respondent highlighted that further clarification is required in regards to how data will be communicated for the P375 solution. As discussed in Section 3 the exact nature of this will be determined via the industry expert groups in early 2021. It is worth noting that the Workgroup's preference is to use existing data flows wherever possible to minimise disruption and ease any confusion.

Mandatory Participation

A respondent indicated their support for mandatory participation in the P375 solution from third party aggregators that use Meters behind the boundary. They explained that this could make the P379 solution more manageable if this was the case. However, they acknowledged that this does not materially impact the efficiency of the P375 solution in and of itself and agreed that it was out of scope of this Modification, noting it is a discussion that should be held as part of P379.

Independence of Asset Meters

One respondent noted their concern as to how the independence of Asset Meter Operation (from each other and the related Boundary Meter) could be assured. Using Asset Meters increases the risk of a Balancing Service being settled based on full delivery of the volumes requested by the NETSO as measured by the Asset Meter, whilst the System itself has not reciprocally benefitted from those same volumes as measured by the Boundary Meter. This may be due to the other things on site altering their flows at the same time as the delivery of the Balancing Service. Examples could be batteries, EVs, onsite demand, other storage heaters etc. Therefore, it will be important to check that assets behind the meter are acting independently of each other, to give greater confidence to Users that the NETSO is receiving value for money from its Balancing Service and Suppliers' Imbalance positions are being adjusted as accurately as possible.

Determination of appropriate assurance processes for the P375 solution will be developed as part of the implementation phase. Significant assurance will be introduced via the Asset Meter registration and VLP Agent qualification processes, to be developed in the early part of 2021. We will also engage with the PAB during the implementation phase to ensure they are aware of how P375 will be implemented and change the BSC. As per our established Performance Assurance Framework, if the PAB determine that for some reason there is an increased risk to Settlement caused by P375, then the PAB will determine how best to proceed to check, mitigate and recover any potential risk.

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10 Panel's Final Discussions

The Panel considered the Draft Modification Report at its meeting on 10 December 2020 (309/06).

Supplier Benefits

A Panel Member observed that Suppliers can be VLPs and queried how much of the solution is applicable to them. Additionally, the Panel Member commented that a Workgroup is looking at the Cost/Benefit Analysis (CBA) for secondary Suppliers for P379. Elexon advised that P375 was originally raised by Flexitricity to deal with the limitations of the P344 solution for the provision of accurate volumes into Settlement. The main advantage for Suppliers for P375 is that it will give everyone a more accurate representation of their imbalance position. Currently, Suppliers' imbalance position is affected by the VLP beneath the boundary which is based on estimates but P375 will give them more accurate readings. The second advantage for the wider industry is that P375 will also facilitate other Modifications in the future e.g. P379, P383 'Enhanced reporting of demand data to the NETSO to facilitate CUSC Modifications CMP280 and CMP281', P395 'Excluding generators from BM Unit Gross Demand and the calculation of EMR Supplier Charges' and P415 'Facilitating access to wholesale markets for flexibility dispatched by Virtual Lead Parties'. This will enable better access to the market for evolving technologies as we head towards net zero.

Metering Compliance

A Panel Member queried whether P375 would require CoP compliant Metering. Elexon advised that as part of P375, a new CoP, CoP11, had been created. CoP11 had been designed with input from industry, Metering manufacturers and BEIS to facilitate the use of all types of asset metering, whilst ensuring the accuracy and integrity of Settlement was maintained. Additionally, Elexon has also updated and future-enabled BSCP601 to ensure it is not a barrier for new technologies and allows easier access to the market. BSCP601 will allow industry to add new types of asset meters.

Industry Expert Group

Addressing the implementation approach, a Panel member asked whether Elexon had considered the risk of any changes to the processes impacting the recommendations Ofgem is being asked to approve. Elexon advised that this risk is the same as for other Modifications; the IEG is being formed to help shape the Code CSDs for processes underpinning P375. It is not unusual for Elexon to develop the CSDs as part of the implementation phase, and it was felt by the Workgroup that this approach would enable an earlier Implementation Date for P375 and will ensure that the CSDs can be drafted in parallel with commencing the system changes. The rights and obligations for Parties are clearly captured in the P375 legal text and the P375 solution has been agreed, such that the next level of detail can be worked up in the CSDs, but should not require any changes to the solution detailed in the BSC.

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11 Recommendations

The BSC Panel recommends to the Authority:

- That P375 should be **approved**;
- That P375 **does** impact the EBGL Article 18 terms and conditions held within the BSC;
- An Implementation Date for P375 of:
    - 30 June 2022 if an Authority decision is received on or before 30 April 2021; or
    - 3 November 2022 if an Authority decision is received after 30 April 2021 but on or before 30 June 2021;
- The BSC legal text for P375; and
- The redlining to the BSC Subsidiary Documents in Attachments B and C.

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Appendix 1: Legal text Clarifications

The table below contains a full list and reasoning of the amendments made to the P375 draft legal text following the Report Phase Consultation.

Provision(s)	Amendment	Justification
Section J		
J1.1(d) and J6.1.4A	Changed AMRS to AMR	AMR is the Asset Meter Register where the change of Agent is made, whereas the AMRS is the Service SVAA provides
J5.1.3 and J6.1.4A	Inserted "Virtual Lead" before Party Agents	The Party Agents for a Virtual Lead Party are defined specifically as Virtual Lead Party Agents
J6.1.4A	Changed BSCP501 to BSCP602	The correct BSCP should be 602 and not 501. BSCP501 refers to the SMRS. However VLPs will be informing SVAA of the appointment using the Asset Meter Register Service
Section S		
S2.7A.2	Changed Supplier to Virtual Lead Party	The new paragraph is related to obligations on the Virtual Lead Party and not the Supplier
Section S-2		
3.3.2A(f)	Changed the subscript in AMMC removing the Za	The Za relate to whether the data is Primary or Secondary Supplier and the Data Aggregator. These subscripts were carried over from SMMC but are not needed for data received froim Asset Metering System.
3.10.4A	Deleted and replaced the paragraph with alternative text	Drafting tightened up by replacing general explanation and example with explicit calculations
Section X, Annex X-1		
Deletion of unused definition	Deleted "Asset Metering Agent" definition	The definition was not referenced throughout the documentation and was therefore unnecessary
Section X, Annex X-2		

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Provision(s)	Amendment	Justification
Introduction of two new definitions	Insertion of two new definitions which had not been included in X-2 as required.	Asset Metering System Metered Consumption (AMMC Kj) in paragraph 3.5.3A which Half Hourly Data Collectors send to SVAA, and Asset Metering System Metered Consumption (VMMCHNLKj) in paragraph 7.1.1C which is the equivalent of Metering System Metered Consumption from Asset Metering Systems and not SVA Metering Systems. Ideally one of these definitions would be renamed but this would require significant rewording as the formulae flow through to other paragraphs which would be inappropriate after consultation.
CoP11		
6.1.3	Added a table to clarify the acceptable range of frequency criteria and operational voltage and highlighting that the limits of error are relating to power and energy. Also clarified that the necessity to perform a proving test would be determined in the relevant BSCPs.	This information is already assumed per the other technical specifications and this is therefore not a material change, but this table removes any ambiguity.

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Appendix 2: Workgroup Details

Workgroup's Terms of Reference

Specific areas set by the BSC Panel in the P375 Terms of Reference	Conclusion
What standard of Metering will be required? Note any differences between the standards of Metering used for other Balancing Services such as STOR (the use of Secondary BM Unit's may be extended further than the use of Replacement Reserve under TERRE).	A new standard for Metering will be created – CoP11
Consider appropriate ways to demonstrate independence of the asset if required? How can we appropriately provide assurance of the impacts of the balancing service on the Total System?	SVAA will assure independence as part of the registration process. The SVAA will calculate impact on the Total System
How will pseudo MPANs be registered and linked to the asset and how will these MPANs be subsequently be linked to the Settlement Meter?	AMSIDs (not pseudo MPANs) will be registered with the SVAA and the VLP will be responsible for linking the AMSID to the Boundary Point MSID
Is the solution, or can it be future proofed against potential future Industry developments, for example domestic assets providing Balancing Services or operating in the Balancing Mechanism.	CoP11 will allow for all future types of Metering. We have also identified how P375 will help facilitate future industry change
What changes are needed to BSC documents, systems and processes to support P375 and what are the related costs and lead times?	See Impacts section
Are there any interactions (complements and conflictions) between P375 and P376?	The P376 legal text will draw on P375's
Will any new data flows or amendments to data flows be required?	They will and will be identified during the Implementation process
Are there any Alternative Modifications?	Non were put forward by the group
Should P375 be progressed as a Self-Governance Modification?	The Workgroup's recommendation is that P375 is not Self-Governance
Does P375 better facilitate the Applicable BSC Objectives than the current baseline?	See Workgroup's conclusions

Assessment Procedure timetable

P375 Assessment Timetable	
Event	Date
Panel submits P375 to Assessment Procedure	18 December 2019
Workgroup Meeting 1	24 January 2019 (with P376)
Workgroup Meeting 2	19 March 2019 (with P376)
Workgroup Meeting 3	16 May 2019

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P375 Assessment Timetable	
Event	Date
Workgroup Meeting 4	4 July 2019
Workgroup Meeting 5	20 August 2019
Workgroup Meeting 6	6 November 2019
Workgroup Meeting 7	19 March 2020
Workgroup Meeting 8	19 August 2020
Assessment Procedure Consultation	24 August 2020 to 14 September 2020
Workgroup Meeting 9	23 September 2020
Panel considers Workgroup's Assessment Report	8 October 2020

Workgroup membership and attendance

P375 Workgroup Attendance										
Name	Organisation	24 Jan 19	18 Mar 19	16 May 19	04 Jul 19	20 Aug 19	06 Nov 19	19 Mar 20	19 Aug 20	23 Sep 20
Members										
Douglas Alexander	Elexon *(Chair)*	✓	×	×	✓	✓	✓	☎	×	×
Lawrence Jones	Elexon *(Chair)*	×	✓	✓	×	×	×	×	×	×
Chris Wood	Elexon *(Lead Analyst)*	×	×	×	×	×	✓	☎	☎	☎
Tom Darwen	Elexon *(Lead Analyst)*	×	✓	✓	✓	✓	×	×	×	×
Steven Bradford	Elexon *(Lead Analyst)*	✓	×	×	×	×	×	×	×	×
Alastair Martin	Flexitricity *(second Proposer)*	×	✓	✓	✓	×	✓	☎	☎	☎
Saskia Barker	Flexitricity *(original proposer)*	✓	×	×	×	×	×	×	×	×
Claire Addison	Flexitricity *(alternate Proposer)*	×	×	×	×	✓	×	☎	☎	×
Alessandra de Zottis	UKPR	✓	✓	✓	✓	×	×	×	×	×
Andrew Colley	SSE	☎	✓	✓	×	✓	×	☎	☎	☎
Bill Reed	RWE	✓	✓	✓	✓	×	✓	☎	×	☎

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P375 Workgroup Attendance										
Name	Organisation	24 Jan 19	18 Mar 19	16 May 19	04 Jul 19	20 Aug 19	06 Nov 19	19 Mar 20	19 Aug 20	23 Sep 20
Grahame Neale	National Grid	✓	✓	✓	✓	✓	☎	×	☎	×
Graz MacDonald	Green Frog	×	×	×	×	☎	×	×	×	×
Ian Hall	IMServ	×	×	×	×	✓	☎	☎	☎	☎
James Murphy	Stark	×	✓	✓	✓	✓	✓	☎	×	×
Jo Manship	RWE	×	×	×	×	✓	×	×	×	×
Lisa Waters	Waters Wye	✓	×	✓	×	×	☎	×	☎	×
Meg Wong	Stark	✓	✓	✓	✓	✓	×	×	☎	☎
Nik Wills	Stark	✓	✓	✓	✓	✓	×	☎	☎	☎
Paul Bedford	Opus Energy	×	×	×	×	✓	×	×	×	☎
Paul Farmer	Shell Energy	×	×	×	×	☎	☎	×	×	×
Paul Troughton	Enel	✓	✓	✓	✓	×	✓	☎	☎	☎
Rick Parfett	ADE	✓	✓	✓	✓	✓	✓	☎	☎	☎
Steve Taylor	Quorum	×	×	×	✓	×	×	×	×	×
Attendees										
Damian Clough	Elexon *(Design Authority)*	✓	✓	✓	✓	☎	✓	☎	☎	☎
Matt Roper	Elexon *(Design Authority for P344)*	×	×	×	×	✓	×	×	×	×
Peter Frampton	Elexon *(Design Authority for P379)*	×	×	×	×	×	☎	×	×	×
Aditi Tulpule	Elexon *(Lead Lawyer)*	×	×	×	×	×	✓	☎	×	☎
Nick Brown	Elexon *(Lawyer)*	✓	×	×	×	×	×	×	×	×
Iain Nicoll	Elexon *(Metering)*	×	×	×	×	✓	✓	✓	☎	☎
Roan Chavez	Elexon *(Market entry and Qualification)*	×	×	×	×	×	✓	×	×	×
Matthew Woolliscroft	Elexon *(lead Analyst for P376)*	✓	✓	✓	✓	×	×	×	×	×
Alexander Kelly	Ofgem	×	×	×	×	×	✓	☎	×	×

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P375 Workgroup Attendance										
Name	Organisation	24 Jan 19	18 Mar 19	16 May 19	04 Jul 19	20 Aug 19	06 Nov 19	19 Mar 20	19 Aug 20	23 Sep 20
David Beaumont	Ofgem	✓	✓	✓	×	×	×	×	×	×
Kirsten Nazareth	Ofgem	✓	✓	✓	×	×	×	×	×	×
James Hill		×	×	×	×	×	×	×	×	☎
Alex McLellan	Indra	×	×	×	×	✓	×	×	×	×
Ben White	Ovo Energy	✓	×	×	×	×	×	×	×	×
Chris Proudfoot	Centrica	×	✓	✓	✓	×	×	×	×	×
Colin Gentleman	SSE	×	×	×	✓	✓	×	×	×	×
Conor Maher McWilliams	Kaluza	✓	×	✓	✓	✓	×	×	×	×
David Graves	Quorom	✓	✓	✓	✓	✓	×	×	×	×
Genna Boyle	Limejump	×	×	×	×	☎	×	×	×	×
Jack Abbott	Centrica	✓	×	×	×	×	×	×	×	×
James Atkinson	Centrica	×	×	×	×	×	☎	×	×	×
John Porro	Flexitricity	×	×	×	×	×	×	×	☎	×
Michael Ayres	Flexible Power Systems	×	×	×	×	×	×	×	☎	×
Mike Schooling	Kaluza	×	×	×	×	✓	×	×	×	×
Rupert Redesdale	Energy Managers Association	×	×	×	×	×	×	☎	☎	☎
Simon Lord	Engie	×	×	×	×	×	☎	×	×	×
Thomas Clarke	Verv	×	×	×	×	✓	×	×	×	×
Valts Grintals	Kaluza	×	×	×	×	×	✓	☎	☎	×

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Appendix 3: Glossary & References

Acronyms

Acronyms used in this document are listed in the table below.

Acronyms	
Acronym	Definition
AC	Alternate Current
AMR	Asset meter register
AMSID	Asset MSID
BEIS	Department for Business, Energy and Industrial Strategy
BM	Balancing Mechanism
BOA	Bid-Offer Acceptance
BRP	Balance Responsible Party
BSC	Balancing and Settlement Code
BSCP	BSC Procedure
BSP	Balancing Service Provider
CHP	Combined Heat and Power
CoP	Code of Practice
CSD	Code Subsidiary Document
CUSC	Connection and Use of System Code
CVA	Central Volume Allocation
DC	Direct Current
DCUSA	Distribution Connection Use of System Agreement
DSO	Distribution System Operator
DSR	Demand Side Response
DTN	Data Transfer Network
EBGL	Electricity Balancing Guideline
EMR	Energy Market Reform
EV	Electric Vehicle
FIT	Feed-in Tariffs
FPN	Final Physical Notification
GB	Great Britain
GSP	Grid Supply Point
HH	Half Hourly
HHDA	HH Data Aggregator
HHDC	HH Data Collector
ISG	Imbalance Settlement Group
I&C	Industrial and Commercial
LDSO	Licensed Distribution System Operator
LLF	Line Loss Factor

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Acronyms	
Acronym	Definition
LLFC	LLF Class
MEL	Maximum Export Limit
MOA	Meter Operator Agent
MPAN	Meter Point Administration Number
MRA	Master Registration Agreement
MSID	Metering System Identifier
MTD	Meter Technical Details
NETA	New Electricity Trading Agreement
NETSO	National Electricity Transmission System Operator
NGESO	National Grid Electricity System Operator
PAB	Performance Assurance Board
PV	Photovoltaic
SAA	Settlement Administration Agent
SBMU	Secondary BM Unit
SCR	Significant Code Review
SEC	Smart Energy Code
SEG	Smart Export Guarantee
STOR	Short-Term Operating Reserve
SVA	Settlement Volume Allocation
SVAA	SVA Agent
SVG	Settlement Volume Allocation Group
TAA	Technical Administration Agent
TAM	Technical Assurance of Metering
TCR	Targeted Charging Review
TERRE	Trans-European Replacement Reserve Exchange
TSO	Transmission System Operator
UMS	Unmetered Supply
VLP	Virtual Lead Party

External links

A summary of all hyperlinks used in this document are listed in the table below.

All external documents and URL links listed are correct as of the date of this document.

External Links		
Page(s)	Description	URL
6	European Balancing Guideline (EBGL)	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R2195
6	P344 'Project TERRE'	https://www.elexon.co.uk/mod-proposal/p344/

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External Links		
Page(s)	Description	URL
6	TERRE implementation plan	https://www.elexon.co.uk/about/trading-electricty-market/terre-wider-access/
8	BSC Procedure (BSCP)601 'Metering Protocol Approval and Compliance Testing'	https://www.elexon.co.uk/csd/bscp601-metering-protocol-approval-and-compliance-testing/
9	BSC Section F – Modification Procedures	https://www.elexon.co.uk/the-bsc/bsc-section-f-modification-procedures/
11	BSCP602 'SVA Metering System Register'	https://www.elexon.co.uk/csd/bscp602/
11	Switching Programme Significant Code Review	https://www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/smarter-markets-programme/switching-programme
16	BSCP550 'Shared SVA Meter Arrangement of Half Hourly Import and Export Active Energy'	https://www.elexon.co.uk/csd/bscp550-shared-sva-meter-arrangement-of-half-hourly-import-and-export-active-energy/
17	Open Networks Project	https://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-overview/
19	P379 'Multiple Suppliers through Meter Splitting'	https://www.elexon.co.uk/mod-proposal/p379/
19	P383 'Enhanced reporting of demand data to the NETSO to facilitate CUSC Modifications CMP280 and CMP281'	https://www.elexon.co.uk/mod-proposal/p383/
19	P395 'Excluding generators from BM Unit Gross Demand and the calculation of EMR Supplier Charges'	https://www.elexon.co.uk/mod-proposal/p395/
20	'Increasing access to BSC Data'	https://www.elexon.co.uk/mod-proposal/p398/
20	March 2020 budget statement	https://www.gov.uk/government/publications/budget-2020-documents/budget-2020
20	BEIS November 2017 report	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/657144/DSR_Summary_Report.pdf
20	BEIS publication 'Clean Growth - Transforming Heating' December 2018	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/766109/decarbonising-heating.pdf
23	P415 Modification page	https://www.elexon.co.uk/mod-proposal/p415/
24	Independent aggregators and access to the energy market – Ofgem's view	https://www.ofgem.gov.uk/publications-and-updates/independent-aggregators-and-access-energy-market-ofgem-s-view

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External Links		
Page(s)	Description	URL
32	Issue 70 'Settlement of Secondary BM Units using metering at the asset'	https://www.elexon.co.uk/smg-issue/issue-70/

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