BSC Modification Proposal Form	At what stage is this document in the process?
# P395 ## Mod Title: Aligning BSC Reporting with EMR Regulations - an enduring solution	01 Modification 02 Workgroup Report 03 Draft Modification Report 04 Final Modification Report

Purpose of Modification:

This Modification is intended to amend BSC processes so that electricity provided by Suppliers to Generators (including Storage) operated by generation licence holders for generation-related activities is **excluded** from the BM Unit Gross Demand Data reported to Electricity Market Reform Settlement Ltd (EMRS) by the Settlement Administration Agent (SAA). This change is necessary to allow EMRS to collect Contract for Difference (CFD) and Capacity Market (CM) levies from licensed Suppliers in a manner consistent with EMR Regulations and the BEIS/Ofgem Smart Systems and Flexibility Plan.

	The Proposer recommends that this Modification should: • not be a Self-Governance Modification Proposal; and • be assessed by a Workgroup and submitted into the Assessment Procedure. This Modification will be presented by the Proposer to the BSC Panel on 14 November 2019. The Panel will consider the Proposer's recommendation and determine how best to progress the Modification.
	High Impact: None
	Medium Impact: Suppliers, Generators, HHDCs, HHDAs, EMRS, BSCCo
	Low Impact: None

Contents

Timetable

The Proposer recommends the following timetable:

Initial consideration by Workgroup	December 2019/January 2020
Assessment Procedure Consultation	February/March 2020
Workgroup Report presented to Panel	April 2020
Report Phase Consultation	April 2020
Draft Modification Report presented to Panel	May 2020
Final Modification Report submitted to Authority	May 2020

Any questions?

Contact:
Ivar Macsween

ivar.macsween@elexon.co.uk

020 7380 4270

Proposer:
Jack Presley Abbott

Jack.PresleyAbbott@centrica.com

07557 615587

Proposer's representative:
N/A

N/A

N/A

Other:
N/A

N/A

N/A

Other:
N/A

N/A

N/A

1 Summary

What is the issue?

The BSC requires BSCCo (or its appointed BSC Agents) to provide the EMR Settlement Services Provider (SSP) with "EMR Settlement Data" required to calculate CFD and CM charges for Licensed Suppliers. This data takes the form of a BM Unit Gross Demand Report, identifying the gross Import for each Supplier in each Settlement Period.

Currently this report attributes to Suppliers electricity they have provided to generators (including storage facilities)[1] operated by generation licensees, which falls outside the definition of 'supply' in the Electricity Act 1989. The Department for Business, Energy and Industrial Strategy (BEIS) and Ofgem made clear in their joint Smart Systems and Flexibility Plan (published in July 2017) that the Supplier Obligation is not payable in relation to such imports. This issue with the BSC data provided to the EMR SSP leads to over-charging of CFD and CM levies for Suppliers whose customers are generation licensees operating Generation or Storage Facilities.

On 8 November 2018 the BSC Panel agreed an interim solution to mitigate the impact of this issue, which was implemented by EMRS in February 2019. But this interim solution is limited in scope, and does not fix the issue in all cases. The BSC Panel recognised that an enduring solution to the issue was appropriate, but would need to be progressed through a BSC Modification (once Ofgem had concluded their consultation on 'Clarifying the regulatory framework for electricity storage').

What is the proposed solution?

Replacing the interim solution with an enduring solution (capable of correctly calculating chargeable supply volumes for all sites) requires:

- BSC processes for registering (and collecting data from) Asset Metering Systems located 'behind the Settlement Meter', independently of the Supplier's SVA or CVA Boundary Point metering. This element of the required solution will be very similar to processes already being developed by the Workgroup looking at BSC Modification P375 ('Settlement of Secondary BM Units using metering behind the site Boundary Point'); and
- New calculation processes for the Supplier Volume Allocation Agent (SVAA) and Central Data Collection Agent (CDCA) or Settlement Administration Agent (SAA) to apportion the Imports measured at the Boundary Points into those which constitute 'supply' for purposes of the Electricity Act 1989 (and are therefore chargeable) and those that do not.

2 Governance

Justification for proposed progression

This Modification Proposal is intended to have the effect of ensuring that Imports to Generation and Storage operated by generation licence holders (for purposes related to generation) are not subject to EMR charges. This is desirable, and will bring EMR charging arrangements in line with EMR Regulations

[1] All references to generation or generators includes storage or storage facilities, unless the context differentiates between generation or generators and storage or storage facilities.

and the BEIS/Ofgem Smart System and Flexibility Plan; but it is therefore a material change that may materially affect existing or future electricity consumers and competition in the generation of electricity. For this reason we consider that the Modification should **not** be treated as Self-Governance.

We believe that the Modification does **not** meet Ofgem's criteria for Urgency i.e. it is not linked to an imminent issue or a current issue that if not urgently addressed may cause:

(a) a significant commercial impact on Parties, Consumers or stakeholder(s); or
(b) a significant impact on the safety and security of the electricity and/or gas systems; or
(c) a Party to be in breach of any relevant legal requirements.

Requested Next Steps

This Modification should be:

- assessed by a Workgroup and submitted into the Assessment Procedure

3 Why Change?

What is the issue?

Electricity Market Reform (EMR) was implemented in 2015, and requires Licensed Suppliers to fund Contracts for Difference (CFD) and the Capacity Market (CM). The relevant Regulations require that the required CFD and CM levy payments should be calculated for each Licensed Supplier based on the amount of electricity that they have supplied to premises in Great Britain (GB).

Calculating these levy payments is the responsibility of the EMR Settlement Services Provider (SSP) appointed by the Low Carbon Contracts Company (LCCC) and the Electricity Settlements Company (ESC). The EMR SSP is EMR Settlement Limited, a subsidiary of ELEXON. In order to allow the EMR SSP to calculate CFD and CM levies, Sections V5 and C11.2 of the Balancing and Settlement Code (BSC) require that BSCCo (or its appointed BSC Agents) provide the EMR SSP with "EMR Settlement Data" required to perform their calculations.

In practice, this EMR Settlement Data takes the form of a BM Unit Gross Demand Report, provided to the EMR SSP by the SAA, which identifies the gross Import for each Supplier in each Settlement Period. However, this report currently attributes to Suppliers electricity they have provided to generators operated by generation licence holders, which falls outside the definition of 'supply' in the Electricity Act 1989. The Department for Business, Energy and Industrial Strategy (BEIS) and Ofgem made clear in their joint Smart Systems and Flexibility Plan (published in July 2017) that final consumption levies (including CFD and CM charges) are not payable in relation to such Imports.

The impact of this issue is that some Suppliers providing electricity to generators operated by generation licence holders are currently being overcharged for CFD and CM levies, as a result of the BM Unit Gross Demand Report overstating the electricity they have supplied. To the extent that Suppliers pass on these charges to their customers, the issue may act as a barrier to market for certain forms of Generation and Storage. It may also be impacting new innovative business models, including but not limited to domestic storage.

Why has this issue not been addressed previously?

In October 2018, ELEXON issued a consultation on 'Aligning BSC reporting with EMR Regulations', which explained in detail the issue that this Modification seeks to address. On 8 November 2018, the BSC Panel considered responses to the consultation (see paper 284/07), and agreed that:

- In the short term, the EMR SSP should implement an interim solution to this BSC issue (to deal with straightforward sites that can be charged correctly using data from the Boundary Point Metering System, without needing data from on-site 'sub-metering'). This solution was implemented by EMRS in February 2019 – see EMR Circular 170. This solution only applies to stand-alone storage and therefore behind-the-meter storage assets are unable to use this interim solution. Additionally, whilst in principle the interim solution applies to CVA metered storage assets, this has so far not been successful for CVA-metered stand-alone storage at this time.
- In the longer term, an enduring solution should be implemented within the BSC to ensure that more complex sites can be charged correctly.

At the time, ELEXON advised the BSC Panel that the enduring solution would need to build upon the solutions for Modification Proposals P344 (TERRE and Wider Access) and P375 ('Settlement of Secondary BM Units using metering behind the site Boundary Point'). It would also need to be consistent with the outcome of Ofgem's October 2017 consultation on 'Clarifying the regulatory framework for electricity storage'. At that point there was still some uncertainty about the direction in which these initiatives were heading. But Ofgem has now proposed a way forward on its consultation, and the P375 Workgroup is making good progress on defining the requirements for use of Asset Metering in Settlement. The uncertainty is therefore now sufficiently resolved for a Workgroup to develop the enduring solution.

Who is affected by this issue?

Currently (following implementation of the interim solution in February 2019) the EMR SSP is able to avoid charging Suppliers for Imports to Generation or Storage operated by generation licence holders that:

- Has its own connection to the Transmission System or Distribution System (i.e. does not share a connection with demand); and
- Has Imports and Exports registered in the same system i.e. both in the Supplier Meter Registration System (SMRS) or both in the Central Meter Registration System (CMRS).

For any other Generation or Storage operated by generation licence holders at 'complex' sites, whether connected to the Distribution or Transmission System or registered in SMRS or CMRS, BSCCo does not provide Settlement Data to EMR SSP that excludes Imports to these facilities. Consequently, EMR SSP currently includes these more complex facilities in its calculation of charges to the Supplier and so the Supplier will be charged for Imports to the Licensee-operated Generation that are not 'supply', leading to over-charging of the Supplier. Suppliers may then 'pass through' these charges to their customers, so the ultimate impact is on Licensee-operated Storage or Generation. For Storage operated by generation licence holders in particular, these additional Import charges may significantly impair the financial viability of some new business models.

To illustrate the issue in more detail, consider a site that has a mixture of Storage (e.g. battery storage) and Generation (e.g. a solar farm) both operated by generation licence holders; and Customer(s) Demand, some of whom may have exempt generation, as illustrated in Figure 1 below:

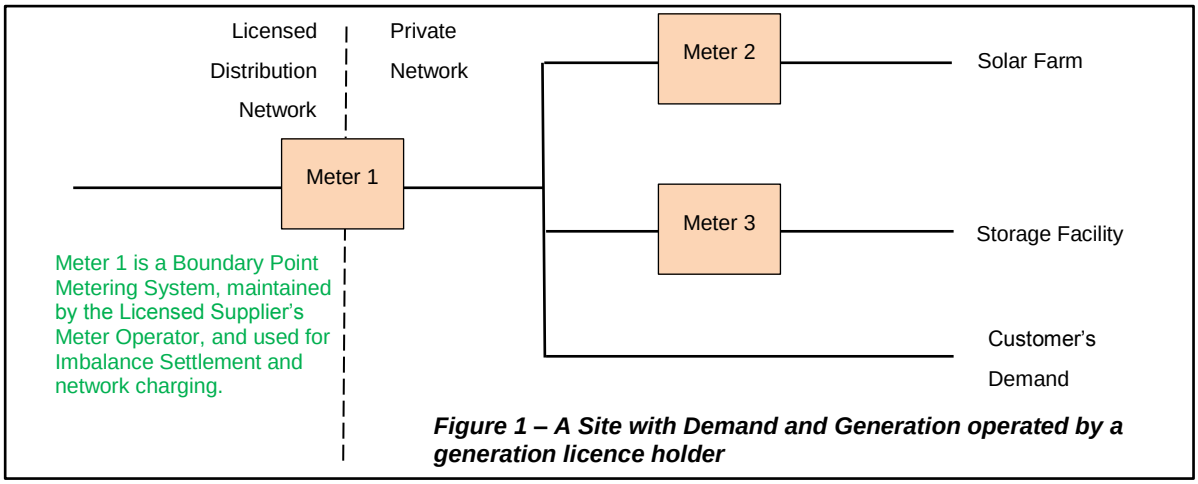

Figure 1 – A Site with Demand and Generation operated by a generation licence holder

Normally (i.e. in the absence of any attempt to use the EMRS interim solution) EMR processes would calculate CFD and CM levies for this site using Import metered data from the Supplier's Boundary Point Metering System (i.e. Meter 1 in Figure 1). This means CFD and CM levies would be charged on net Imports to the site. The effect of this is summarised in Table 1:

Table 1 – Current Default Approach to charging CFD and CM Levies
(CFD and CM levies calculated based on net Import at Boundary Point)

No.	Scenario	Charging Treatment
1.	Electricity imported from Total System, and used by a Licensee-operated Generator (e.g. technical losses in a licensed generating unit or Storage Facility).	**Supplier charged** on Imports to Licensee-operated Generation.
2.	Electricity imported from Total System, and used for some non-generation licensed purpose (e.g. end use by a customer, or exempt generation).	**Supplier charged** on Imports to customer.
3.	Electricity imported from Total System, stored for a period of time in a generation Licensee-operated Storage Facility, and then Exported back to the Total System.	**Supplier charged** on Imports to the Storage (in relation to the Settlement Period in which the Import occurred).
4.	Electricity imported from Total System, stored for a period of time in a Licensee-operated Storage Facility, and then used on-site for some non-generation licensed purpose (e.g. end use by a customer, or exempt generation).	**Supplier charged** on Imports to the Storage (in relation to the Settlement Period in which the Import occurred).
5.	Any electricity generated on-site (from something other than electricity, i.e. not storage), regardless of whether it's used on-site, or stored and subsequently Exported.	**Supplier not charged**.

For scenarios 1 and 3 in Table 1, this is not consistent with the Regulations. The Supplier is being charged for Imports provided to a Generator operated by a generation licence holder for generation-related activities. Such Imports are not 'supply' under the Electricity Act, and should not be charged for.

The EMRS interim solution was not intended to deal with the type of complex site described in Figure 1. The interim solution is only intended to be used where there is an SVA Metering System that is only recording Imports to Generation operated by a generation licence holder.

However, it would potentially be possible to use it at the site illustrated in Figure 1 by making use of "difference metering". For example, the Supplier could register:

- A pair of SVA Metering Systems[2] (one for Import, one for Export) for the Licensed Generation and Storage. The Half Hourly Data Collector (HHDC) would allocate the energy recorded on Meter 2 and Meter 3 (in Figure 1) to this MSID Pair; and
- Another SVA Metering System for the Customer. The HHDC would use differencing to allocate the energy used by the Customer to this Metering System.

Such a configuration would potentially allow the SVA Metering Systems associated with the Licensed Generation and Storage to be enrolled in the EMR interim solution. However, as Table 2 illustrates, this would still not achieve the required result of only charging the Licensed Supplier for electricity supplied to the premises:

Table 2 – Effect of Combining the Interim Solution with Difference Metering

No.	Scenario	Charging Treatment
1.	Electricity imported from Distribution System, and used by a Licensee-operated Generator (e.g. technical losses in a licensed generating unit or Storage Facility).	**Supplier not charged**.
2.	Electricity imported from Distribution System, and used for some non-generation licensed purpose (e.g. end use by a customer, or exempt generation).	**Supplier charged** on Imports to customer.
3.	Electricity imported from Distribution System, stored for a period of time in a generation Licensee-operated Storage Facility, and then Exported back to the Total System.	**Supplier not charged**.
4.	Electricity imported from Distribution System, stored for a period of time in a Licensee-operated Storage Facility, and then used on-site for some non-generation licensed purpose (e.g. end use by a customer, or exempt generation).	**Supplier charged** at the point in time the electricity is used by the Customer (not the point in time it is supplied to the premises and stored).

[2] Whilst difference metering can be used in relation to CVA Metering Systems, the EMR interim solution can only exclude whole BM Units from its calculations, not individual CVA Metering Systems – e.g. Meter 2 and Meter 3 in this example.

5.	Any electricity generated on-site (from something other than electricity, i.e. not storage), regardless of whether it's subsequently Exported, which is used on-site or stored.	**Supplier charged** for electricity generated on-site and used by the Customer – this is because the difference metering gives the impression that the on-site generation has been Exported to the Distribution System and subsequently Imported from the Distribution System. This assumes that the registrant of the Import Metering System to the customer is a licensed Supplier. **Supplier not charged** where the registrant of the Customer's Import Metering System is not a licensed Supplier.

Use of difference metering in conjunction with the interim solution, resolves scenarios 1 and 3 in Table 2. However, scenarios 4 and 5 in Table 2 are inconsistent with the Regulations. In Scenario 5, the Supplier is charged for electricity they did not supply to the premises. In Scenario 4, they are charged for electricity that they did supply, but the charges are not being applied to the Settlement Period in which they made the supply.

In summary, the BM Unit Gross Demand Report provided to the EMR SSP by SAA does not currently provide the data needed to calculate CFD and CM charges correctly. The interim solution (even if combined with difference metering) does not address this issue for sites at which end-use demand and Licensee-operated Generation share a connection to the Distribution System or Transmission System. An enduring solution is required to allow CFD and CM charges to be correctly applied to such sites.

Note that this issue does not apply in the same way to other Supplier levies (such as the Renewables Obligation), where responsibility for calculating the necessary supply volumes lies with Supplier. This potentially allows individual Suppliers to develop manual processes to deal with individual sites. Such an approach is not possible for the CFD and CM levies, as the Regulations require the supply volumes to be calculated centrally by ELEXON or its BSC Agents.

4 Code Specific Matters

Technical Skillsets

We recommend that the Workgroup assessing this Modification Proposal has expertise in the following areas:

- The Supplier levies funding CFDs and the CM;
- Licensed Storage and Generation (including small embedded generation); and
- BSC Settlement calculations and processes

Reference Documents

Relevant documentation includes:

- The Electricity Act 1989, as amended, which defines the activity of 'supply';
- The Contracts for Difference (Electricity Supplier Obligations) Regulations 2014, as amended, which set out the Regulations for levying CFD Charges on Licensed Suppliers;
- The Electricity Capacity (Supplier Payment etc.) Regulations 2014, as amended, which set out the Regulations for levying CM Charges on Licensed Suppliers;

- The Ofgem/BEIS Smart Systems and Flexibility Plan (July 2017), which confirms that in the view of BEIS and Ofgem Imports to Licensed Generation should not be subject to final consumption levies;
- ELEXON's October 2018 consultation on 'Aligning BSC reporting with EMR Regulations', and subsequent Panel paper 284/07; and
- Ofgem's June 2019 proposal on 'Clarifying the regulatory regime for electricity storage'.

5 Solution

Proposed Solution

The proposed solution is to amend BSC systems and processes so that the SAA-I042 'BM Unit Gross Demand Report' only includes electricity 'supplied' to the premises by the Supplier, and therefore excludes electricity imported by Generators operated by a licensee for generation activities (i.e. those activities authorised by their licence to carry on). We believe the key components of this solution are as shown in the following table:

Table 3 - Key Components of the Required Solution

1.	**Registration and Data Collection processes for Asset Meters (not located at the Boundary Point)** In order to correctly calculate supply volumes to sites where Licensee-operated generation shares a network connection with customer's other 'final consumption' facilities, ELEXON requires data from asset meters located behind the Boundary Point. Data from such metering would be used for calculating chargeable volumes, but would not be relevant to Imbalance Settlement (unlike the 'difference metering' arrangements which are already possible under the BSC). For sites where the Boundary Point metering is registered in SMRS, the required registration and data collection processes would be very similar to those already being developed for Modification Proposal P375 ('Settlement of Secondary BM Units using metering behind the site Boundary Point'). The main difference is that the Asset Metering Systems in question would be registered by Licensed Generators (or Suppliers acting on their behalf), rather than Virtual Lead Parties. A similar approach to that proposed by P375 will be defined by this modification and followed by the CDCA for sites where the Boundary Point metering is registered in CMRS.

2.	**Process for Declaring Metering Systems associated with Licensed Generation or Storage** The solution would introduce a BSC process to allow Suppliers and/or generation licensees to declare which (Boundary Point and Asset) Metering Systems are metering licensee-operated generation and where necessary any other on-site demand. This process would be potentially similar to: • The process already introduced by EMRS for the interim solution (except that it would apply to Asset Metering Systems as well as Boundary Point Metering Systems, and would be operated by a BSC Agent rather than EMRS). • The process developed by the Workgroup for Modification Proposal P383 ('Enhanced reporting of demand data to the NETSO to facilitate CUSC Modifications CMP280 and CMP281'), except that it would apply to Asset Metering Systems as well as Boundary Point Metering Systems, and all Licensed Generation (not just Licensed Storage). These existing processes include assurance mechanisms to detect and rectify any abuse of the process (such as declarations of Metering Systems measuring end-use demand as well as Licensed Generation). The new solution will also need to include such mechanisms.
3.	**Processes for sending required Metered Data to SVAA and for collecting Metered Data from Asset Metering related to CVA Boundary Metering** In order to calculate how much of the Imports to a site are chargeable, SVAA will need to receive metered data from relevant Boundary Point and Asset Metering Systems. For sites where the Boundary Point metering is registered in SMRS, the required processes are either in place, or already being developed: • In February 2019, Modification P344 introduced processes for SVAA to request metered data for relevant Boundary Point Metering Systems from HHDAs. These processes can be used for this Modification also. • The solution being developed by the P375 Workgroup include a process for SVAA to receive metered data for Asset Meters from Half Hourly Data Collectors (HHDCs) The Workgroup will need to develop equivalent arrangements for sites where the Boundary Point and Asset metering is registered in CMRS.
4.	**Process for SVAA and CDCA to calculate chargeable Imports** A process will be required for SVAA and CDCA to compare metered data from Asset Meters (recording flows to/from Licensee-operated generation) with metered data from Boundary Point meters, and hence calculate how much of the Import measured at the Boundary Point should be treated as chargeable supply, and how much should be treated as non-chargeable provision of electricity to Licensee-operated generation. The remainder of this section describes in detail the required calculations – see below.

5.	**Processes for adjusting BM Unit Gross Demand reported to EMR SSP** Once SVAA and CDCA have calculated the amount of Imports to Licensee-operated generation at each Boundary Point, appropriate adjustments can be made to the data reported to the EMR SSP: • SVAA and CDCA will aggregate the non-chargeable Imports to BM Unit level, and report the total (per Supplier BM Unit or ordinary Primary BM Unit and Settlement Period) to SAA; and • SAA will net these non-chargeable volumes off the BM Unit Gross Demand values reported to the EMR SSP.
6.	**Winding Down of Interim Solution** The new BSC process introduced by this Modification Proposal will be similar to – but broader in scope than – the interim solution currently administered (on behalf of the BSC Panel and LCCC) by EMRS. It would not be efficient to run both processes in parallel, so the new solution should replace the interim solution.

How to calculate Imports to Licensee-operated generation?

As summarised in Table 3 (point 4) above, the solution requires a new process for categorising Imports at the Boundary Point into:

- Imports to a Licensed Generator (for purposes of Licensed Generation), which are not 'supply' under the Act (and are therefore not subject to CFD and CM levies) – i.e. non-chargeable Imports; and
- Imports that are not to a Licensed Generator (or are to a Licensed Generator for purposes other than Generation), which are 'supply' and are therefore subject to CFD and CM levies.

Table 4 below summarises in more detail our understanding of which Imports are chargeable and which are not (although it may be appropriate for the Workgroup to discuss and confirm this):

Table 4 – Correct Approach to charging CFD and CM Levies
(subject to discussion and confirmation by Workgroup)

No.	Scenario	Proposed Treatment
1.	Electricity imported from the Total System, and used by a Licensee-operated generator (e.g. technical losses in a licensed generating unit or Storage Facility).	**Not chargeable** (as the electricity was supplied to a licensee-operated generator for activities authorised by their Generation Licence).
2.	Electricity imported from the Total System, and used for some non-licensed purpose (e.g. end use by a customer, or exempt generation).	**Chargeable** – the electricity was supplied to the premises by a Supplier, and is therefore subject to EMR levies.
3.	Electricity imported from the Total System, stored for a period of time in a Licensee-operated Storage Facility, and then Exported back to the Total System.	**Not chargeable** (as the electricity was supplied to a licensee-operated Generator for activities authorised by their Generation Licence).
4.	Electricity imported from the Total System, stored for a period of time in a Licensee=operated Storage Facility, and then used on-site for some non-licensed purpose (e.g. end use by a customer, or exempt generation).	**Chargeable** – the Licensee-operated generator has not just stored the electricity, but has also provided it to an on-site Customer. This is an exempt supply activity (not a Licensed Generation activity), and therefore the original supply to the premises (which was stored) is

		supply (for the purposes of the Act). EMR levies should be charged on this supply (in relation to the Settlement Period it was supplied to the premises, not the Settlement Period in which the generator subsequently sold it on).
5.	Any electricity generated on-site (from something other than electricity), regardless of whether it's subsequently Exported, used on-site or stored.	**Not chargeable** (as it was not supplied to the premises).

In order to charge in accordance with Table 4, we propose that SVAA and CDCA will need a two-stage process as follows:

- **Step 1** – compare metered data from the Boundary Point Metering System with Asset Metering System metered data for Licensee-operated Generation and Storage, in order to establish the source and destination of electricity flows within that Settlement Period (e.g. how much electricity the Customer is Importing from the Total System, and how much from the Licensee-operated Storage Facility); and
- **Step 2** – categorise the Imports from the Total System as chargeable or non-chargeable, in accordance with Table 4. For most flows this is straightforward e.g. a flow from the Total System to the Customer is always chargeable, and a flow from the Total System to the Licensee-operated (non-Storage) Generation is always non-chargeable. The difficult case is a flow from the Total System and/or any other on-site generation to the Licensee-operated Storage Facility, where the correct treatment depends on how it will ultimately be used. We propose to handle this using a historical usage factor. For example, if 30% of the electricity stored in the Storage Facility over the past [month] was used by the Customer, 30% of any future Imports from the Total System to the Licensee-operated Storage Facility should be treated as chargeable.

Step 1 – Establishing Power Flows within each Settlement Period

As described above in Table 3, we propose that any Licensee-operated generation wishing to benefit from this Modification Proposal should be required to register appropriate metering (Boundary Metering and where necessary Asset Metering), and complete declarations identifying which Metering Systems relate to Licensee-operated Storage and/or Generation. SVAA and CDCA will therefore have access to metered data showing the flows of electricity to and from each Licensee-operated Generation and/or

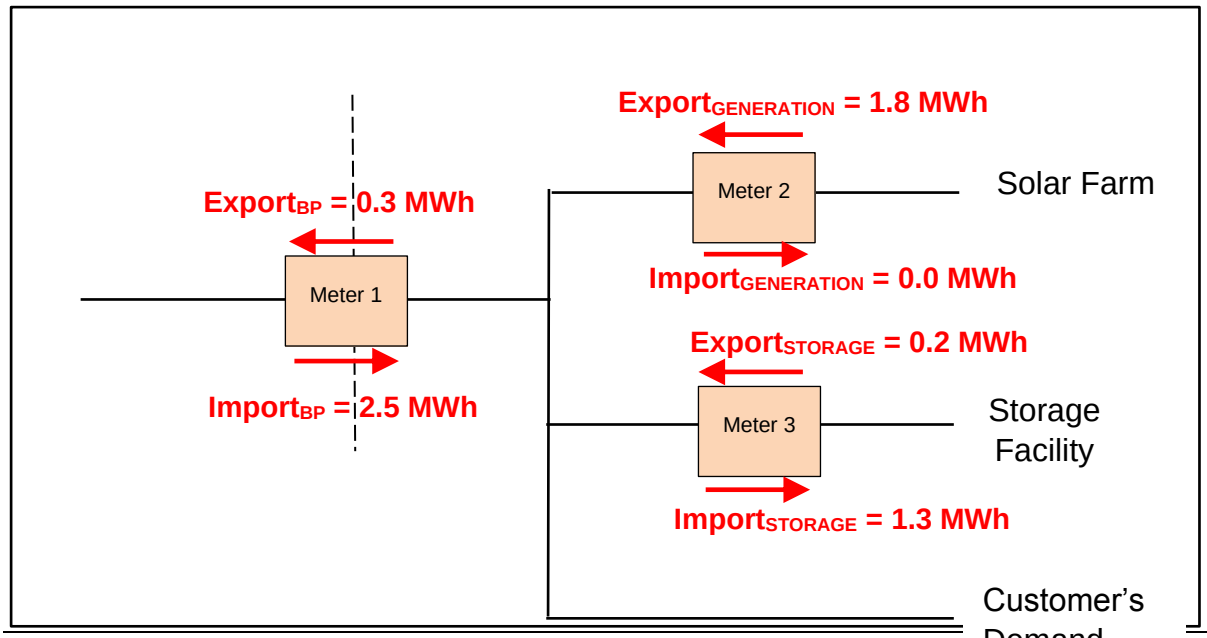

Figure 2 – Example of Power Flows within a Settlement Period

Storage Facility, as well as the flows at the Boundary Point. For example, the metered data might be as follows:

In order to facilitate correct charging of power flows at this site, SVAA or CDCA will need to apportion power flows between the different users on site. Specifically, it will need to:

- Apportion the gross Import at the Boundary Point between Licensee-operated Generation, Licensee-operated Storage and the Customer (in order to establish how much of it should be treated as chargeable supply); and
- Apportion any Export from Licensee-operated Storage between the Licensee-operated Generation and the Customer (because the charging treatment of stored energy depends on where it is ultimately used, as per Table 4 above).

Our proposal - for discussion and agreement by the Workgroup – is that SVAA or CDCA should apportion power flows as follows. A spreadsheet model (attached to this Proposal) illustrates the steps:

- **Step 1A** - establish the net Import or Exports at the Boundary Point, and for each type of user on site (i.e. Licensee-operated Generation, Licensee-operated Storage and Customer). For the Licensee-operated Generation and Licensee-operated Storage this is just a matter of netting metered Import from metered Export. For the Customer the net usage of electricity would established through differencing. In this example:

  Customer Import = (2.5 – 0.3) – (0.0 – 1.8) – (1.3 – 0.2) = 2.9 MWh

  We propose that the calculation should take the same approach to on-site electrical losses as that proposed by the P375 Workgroup i.e. using voltage-based Line Loss Factors. This means that metered data from any Asset Meter at a different voltage level to the Boundary Point should be adjusted appropriately (e.g. readings from an Asset Meter connected at High Voltage would be adjusted if the Boundary Point was at EHV, but not if the Boundary Point was also at HV).

  The end result of step 1A is a net power flow for each class of user. These will (in total) always match the net power flow at the Boundary Point. In this specific example the net power flows would be as follows:

Table 5 – Example Calculation of Net Power Flows		
	Net Import	**Net Export**
Boundary Point	2.2	0
Licensee-operated Generation	0	1.8
Licensee-operated Storage	1.1	0
Customer Demand	2.9	0

- **Step 1B** – allocate the gross Imports (or Exports) at the Boundary Point between different classes of on-site user, in proportion to their net Imports (or Export). Note that the reason for allocating the **gross** power flows at the Boundary Point (rather than the **net** power flows) is that EMR levies are based on gross Imports. In this case:
  - The 2.5 MWh of gross Imports at the Boundary Point would be split 27.5% to the Licensee-operated Storage Facility and 72.5% to the Customer (in proportion to their net Imports); and
  - The 0.3 MWh of gross Exports at the Boundary Point would be allocated 100% to the Licensee-operated Generation (as the only net Exporter in that Settlement Period)

  The end result of step 1B is a determination of the Boundary Point power flows for which each class of user is responsible:

Table 6 – Example Calculation of Responsibility for Boundary Point Power Flows		
	Gross Import	**Gross Export**
Licensee-operated Generation	0	0.3
Licensee-operated Storage	0.6875	0
Customer Demand	1.8125	0

- **Step 1C** – identify power flows within the site. By comparing the net Import or Export from each class of user (Step 1A) with their flow at the Boundary Point (step 1B), SVAA can determine the energy each class of user has taken from other on-site users:

Table 7 – Example Calculation of Power Flows Within the Site		
	Net Import	**Net Export**
Licensee-operated Generation	0	1.5
Licensee-operated Storage	0.4125	0
Customer Demand	1.0875	0

In this case the Licensee-operated Generation has provided (or will be treated for EMR Settlement purposes as having provided) 0.4125 MWh to the Licensee-operated Storage, and 1.0875 MWh to the Customer.

Step 2 – Categorise Imports as Chargeable or Non-Chargeable

The next step is to categorise the gross Imports at the Boundary Point as chargeable or non-chargeable, depending on where they were determined (in Step 1B above) to have been used. In the example above, the Boundary Point Imports would be categorised as follows:

Table 8 – Categorisation of Boundary Point Imports		
	Gross Import at Boundary Point	**Charging Treatment (see Table 4)**
Licensee-operated Generation	0	Not chargeable
Licensee-operated Storage	0.6875	Potentially chargeable (depending on whether it is subsequently used for purposes of generation or supply)
Customer Demand	1.8125	Chargeable

In general, categorising Imports as Chargeable or Non-Chargeable (in accordance with Table 4) is straightforward for:

- Imports used by (non-Storage) Licensee-operated Generation, which are non-chargeable; and
- Imports used by the Customer (which are chargeable)

It is less straightforward for Imports to Licensee-operated Storage, as whether or not they are chargeable depends on where the Imports originated and what subsequently happens to them:

- Imports that are subsequently lost within the Licensee-operated Storage Facility have been used for purposes of carrying out its licence based activity, and are not therefore not chargeable;
- Imports that are subsequently Exported back to the Total System have been used for purposes of carrying out its licence based activity, and are therefore not chargeable; but
- Imports that are subsequently sold (or otherwise transferred) to an on-site Customer have been used by the Generator acting as an exempt supply business (rather than for carrying out its generation licence based activity), and are therefore chargeable.

However, individual kWh of electricity entering the Storage Facility are obviously not labelled; and therefore (in the example above) it is not possible to say when or where the 0.6875 MWh imported by the Storage Facility in this particular Settlement Period was ultimately used. We therefore propose that the 0.6875 MWh should be split into chargeable and non-chargeable components by looking at what happens (on average) over an appropriate Reference Period (e.g. the previous month). SVAA will look at data over

the Reference Period to calculate the fraction of net Imports to the Storage Facility that were subsequently supplied to an on-site Customer, and should therefore be treated as chargeable.

For example, if this analysis showed that (over the Reference Period) 35% of net Imports were subsequently supplied to an on-site Customer, SVAA would treat 35% of the electricity Imported into the Storage Facility from the Distribution System as chargeable.

The Workgroup should consider how best to define the Reference Period (in relation to a given Settlement Period), and how often the fraction of Imports (over that Reference Period) that are chargeable should be calculated.

Upon this change there may be the opportunity to make further amendments to modifications that address issues with charging methodologies for battery storage, such as CMP280, CMP281, DCP341 and DCP350. Currently these modifications addresses issues for stand-alone batteries. Upon the implantation of this change it may be possible to extend these DCUSA and CUSC modifications to behind-the-meter storage assets.

6 Impacts & Other Considerations

We expect that this proposal will impact:

- Generation licensees operating generation (including Storage Facilities)
- Suppliers
- HHDCs
- HHDAs
- BSCCo
- EMRS

Documents impacted will include:

- Balancing and Settlement Code
- BSCP502 – Half Hourly Data Collection
- BSCP503 – Half Hourly Data Aggregation
- BSCP508 – Supplier Volume Allocation
- SVAA Service Description
- SVAA User Requirement Specification
- SVA Data Catalogue
- Interface Definition Document
- SAA Service Description
- SAA User Requirement Specification
- CDCA Service Description
- CDCA User Requirement Specification

BSC Central Systems impacted will be:

- SVAA
- CDCA
- SAA

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

No.

Consumer Impacts

This Modification will directly impact those consumers who operate Storage or Generation Facilities, and hold a Generation Licence (by removing incorrect charges to which they are currently exposed).

It may benefit consumers more generally by removing barriers to the use of electricity Storage, and hence helping consumers – potentially non-domestic and domestic - realise the benefits that Storage can bring to the electricity system. According to the BEIS/Ofgem Smart Systems and Flexibility Plan these include helping to integrate low carbon generation, reduce the costs of operating the system, and help avoid or defer costly reinforcements to the network.

Environmental Impacts

By removing barriers to the use of electricity storage, this Modification may assist in realising the environmental benefits of incorporating storage into the electricity system (such as allowing more low carbon generation to be integrated into the system).

7 Relevant Objectives

Impact of the Modification on the Relevant Objectives:	
Relevant Objective	Identified impact
a) The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence	Neutral
(b) The efficient, economic and co-ordinated operation of the National Electricity Transmission System	**Positive**
(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	Neutral
(d) Promoting efficiency in the implementation of the balancing and settlement arrangements	Neutral
(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]	Neutral
(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	**Positive**
(g) Compliance with the Transmission Losses Principle	Neutral

The primary benefit of this Modification Proposal is in relation to Applicable BSC Objective (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***

Currently the EMR SSP is not able to levy CFD and CM charges on Suppliers in a manner consistent with EMR Legislation, because the EMR Settlement Data provided to the EMR SSP by SAA does not correctly identify the volume of electricity supplied to sites with Licensee-operated Generation or Storage. Resolving this issue will allow the EMR SSP to operate these arrangements consistently with EMR Legislation.

By removing artificial and unintended barriers to the use of Storage, this Modification may also allow additional Storage to be integrated into the electricity system, which may positively impact Applicable BSC Objective (b):

> ***The efficient, economic and co-ordinated operation of the National Electricity Transmission System***

8 Implementation Approach

We propose that this Modification should be implemented at the same time as (or as soon as possible after) Modification Proposal P375 ('Settlement of Secondary BM Units using metering behind the site Boundary Point').

9 Legal Text

We propose that legal text should be developed during the Assessment Procedure, drawing upon work already carried out for related Modification Proposals such as

- Modification Proposal P375 ('Settlement of Secondary BM Units using metering behind the site Boundary Point'); and
- Modification Proposal P383 ('Enhanced reporting of demand data to the NETSO to facilitate CUSC Modifications CMP280 and CMP281').

10 Recommendations

Proposer's Recommendation to the BSC Panel

The BSC Panel is invited to:

- Agree that PXXX not be progressed as a Self-Governance Modification Proposal; and
- Agree that PXXX be sent into the Assessment Procedure for assessment by a Workgroup.