

This document is classified as **White** in accordance with the Panel Information Policy. Information can be shared with the public, and any members may publish the information, subject to copyright

Paper Reference:	TABASC_65_0605_04
Action:	For Decision

P375 (Metering Behind the Boundary Point) Overview and Next Steps

1. Purpose

This paper has two purposes:

1. To provide an overview of the changes being implemented by BSC P375, along with how this will affect Smart metering; and
2. to highlight the opportunity that Smart metering presents to provide an integrated metering solution under P375, along with seeking TABASC endorsement to undertake a project to develop this in more detail.

2. Background

Balancing and Settlement Code (BSC) Modification Proposal [P375 'Metering behind the Boundary Point'](#) will allow Metering Equipment behind the Boundary Point to be used to meter Balancing Services for Settlement purposes rather than the Boundary Point Meter.

The objective of P375 is to allow on-site Balancing Services to be separated from the calculation of Energy Imbalances which are not caused by assets providing those Balancing Services. This will more accurately reflect the balancing-energy volumes provided by Balancing Service Providers (BSPs) and will consequently improve the accuracy of Settlements.

P375 has an implementation date of June 2022. The key changes it will introduce are:

1. **Secondary Balancing Mechanism Units (Secondary BMUs)**, registered by BSPs for Settlement purposes.
2. **Virtual Lead Parties (VLPs)**; a new BSC role which will allow BSPs to register Secondary BMUs to support their participation in the Balancing Mechanism.
3. **BSC Code Of Practice (CoP) 11** defines the minimum requirements for the Metering Equipment to be used to measure power flows to and from Assets which comprise a Secondary BMU. CoP11 sets out the required level of accuracy, format of data and minimum functionality for Asset Metering used under P375.

The registrant of a Boundary Meter will remain responsible for forecasting and settling any power which is not attributed to a Secondary BMU. P375 seeks to minimise the level of additional Energy Imbalance

risk that the registrants of Boundary Point Meters are exposed to using Difference Metering, which is intended to disaggregate the volumes recorded by the Boundary Point meter for Settlement purposes.

3. Overview of P375

3.1 Site configuration and power flow metering

Figure 1 below illustrates how P375 may operate for an import and export configuration at a property. This example comprises a Primary BMU and two Secondary BMUs:

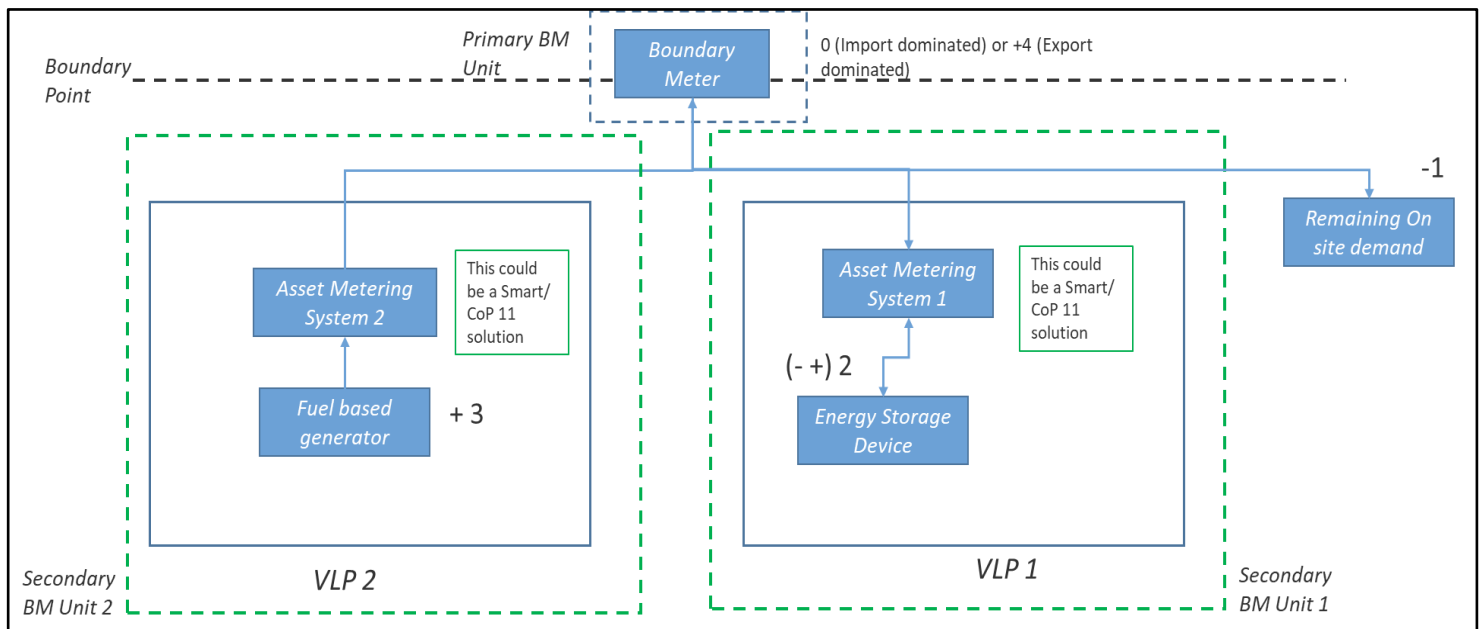
Secondary BMU 1 contains an energy storage device (for example a battery or electric vehicle) and is registered to and operated by VLP 1.

Secondary BMU 2 contains a fuel-based generator (for example a diesel or gas-fired generator) and is registered to and operated by VLP 2.

The Primary BMU comprises any on-site demand which is not attributable to BMU 1 (the remaining on-site demand registered to the energy supplier responsible for the Boundary Point meter).

The maximum capacity of the Assets within each BMU has been provided in figure 1. The signing convention used is that a '+' indicates generation, with a '-' indicating demand. Where a load can switch between generation and demand, both signs have been used.

Figure 1 – Example P375 site configuration



The different combinations of power flows which can arise because of the configuration shown above have been modelled and the results are provided in table 1 below.

To note the columns showing Boundary Point Net (Import)/(Export) only suggests if the energy storage Device is importing or exporting for that configuration.

Table 1 – power flow scenarios

Fuel Based Generator	Energy Storage Device	Remaining On Site Demand	Boundary Point Net (Import)	Boundary Point Net (Export)
+3/ On	(- +)2/ On	-1/ On	0	4
0/ Off	(- +)2/ On	-1/ On	-3	1
+3/ On	0/ Off	-1/ On	-2	-2
+3/ On	(- +)2/ On	0/ Off	1	+5
0/ Off	0/ Off	-1/ On	-1	-1
+3/ On	0/ Off	0/ Off	+3	+3
0/ Off	(- +)2/ On	0/ Off	-2	+2
0/ Off	0/ Off	0/ Off	0	0

Multiple net power flow figures can be recorded at the Boundary Point depending on the combination of activities taking place across the site. The Boundary Point meter will continue to record power flows across the Boundary Point accurately under all the scenarios modelled, but it no longer records the demand that the registered energy supplier of that meter is responsible for accurately.

3.2 Primary BMU adjustment

To ensure that the energy supplier to which the Boundary Point meter is registered to is not exposed to any Energy Imbalances which are outside of their control, the Supplier Volume Allocation Agent (SVAA) will employ an adjustment algorithm which can be summarised as:

$$\text{Primary BMU} = \text{Boundary Point Metered volume} - (\text{BMU 1} + \text{BMU 2})$$

Because the Boundary Point meter remains accurate under all power flow scenarios, and because the SVAA makes an adjustment to account for any know balancing activities taking place on site, P375 should not result in any additional Energy Imbalance risk exposure for the registered energy supplier.

3.3 CoP 11 and Smart metering

Under CoP11, multiple meter specifications can meet the required technical standards to be used as Asset Meters, including Smart Metering Equipment Technical Specification (SMETS) compliant meters. However, there is no requirement for a SMETS compliant meter to operate in 'Smart' mode when being used as an Asset Meter and it is not assumed that SMETS Asset Meters will be commissioned within DCC Systems.

When defining CoP11 and the 375 solution Elexon looked at the SMETS in isolation, without considering how a SMETS meter can be operated using the Services provided by the DCC. Whilst it is possible to install a SMETS meter as an Asset Meter, there is little incentive for a VLP to do so because a SMETS meter operating outside of the wider Smart metering ecosystem does not offer any advantages over a non-Smart CoP 11 meter and is likely to cost more than many its competitors.

Because CoP 11 does not utilise the full range benefits that SMETS meters can provide, it is unlikely that Asset Meters will be integrated into any Smart Metering equipment installed at a site. This presents several drawbacks:

- Additional complexity is introduced by a 'mix and match' of metering infrastructures at a single premises. This could result in nugatory efforts by energy suppliers or VLPs to understand and operate complex site configurations.
- A lack of integration with the SMETS Boundary Point Meter, and no clear mechanism for reconciling multiple metered volumes.
- The IHD attached to a SMETS Boundary Point meter will be misleading because it cannot display the different power flows recorded across a site. The results displayed in table 1 show how misleading this can be.

4. An integrated SMETS solution

It should be possible to develop an integrated P375 solution which embraces the full functionality of Smart metering whilst meeting the requirements of CoP11, for example by making changes which would allow Standalone Auxiliary Proportional Controllers (SAPCs) to be used as Asset Meters. Some of the benefits this could deliver are listed below:

- Allow VLPs to configure and read Asset Meters remotely via DCC infrastructure.
- Allow VLPs to switch loads, this isn't prevented by CoP11, but building upon the functionality using DCC infrastructure would be of benefit especially for demand side response.
- Increasing the level of integration between different assets; possibly supporting data sharing between separate parties operating at a single site to allow optimisation of site operations.
- Allow Smart metering to compete with other (non-Smart) CoP11 metering systems by delivering additional value at a competitive cost.

We therefore recommend that the TABASC agrees to sponsor a SECAS project to develop options which could deliver an integrated SMETS solution to CoP11.

5. Next Steps

Subject to TABASC endorsement of the project, SECAS will present a Project Briefs to the SEC Panel to approve the scope of the project and SECCo Board for release of funds. SECAS would then develop a Project Initiation Document (PID) for developing an integrated SMETS solution to CoP11.

6. Recommendations

The TABASC is requested to:

- **NOTE** the overview of the changes being implemented by BSC P375 provided by this paper; and
- **ENDORSE** the proposed project for SECAS to develop an integrated SMETS solution to CoP11; and
- **NOTE** that the SEC Panel and SECCo Board will be required to approve the scope of the project and release of funds respectively.

Anik Abdullah; SECAS Team; 29 April 2021