PECU Arrays – will they exist in the future?

1. Purpose

This document is seeking to highlight concerns with the inconsistent requirement of PECU Array's under the current BSC arrangements. It then proposes further debate and developing changes to BSCP520.

The lack of clarity in the BSCP520 could lead to excessive requirements for PECU Arrays or no use of PECU Arrays. A sensible pragmatic approach should be established.

2. Background

2.1. Marketwide Half Hourly Settlement

Historically most road lighting equipment has been controlled by PECUs, this has changed in recent years so that now about a third of larger lighting authorities have moved most of their equipment to CMS control. Smaller unmetered customers are expected to remain with the simplicity of PECU controls.

The existing UMS arrangements require all unmetered customers with a demand over 100kW to move to the existing HH arrangements. Those below this level will move to HH [from Oct 2023] as a result of the transition to Marketwide Half Hourly Settlement (MHHS) being considered by P434. MHHS will remove the known errors associated with the NHH UMS annual profiling and chunking errors by requiring all UMS to be calculated on a HH basis.

MHHS has the objective to accurately determine the energy used in Settlement by every customer and attribute this energy, at its time of use, to their respective Supplier. The agreed approach for UMS is to treat each MPAN individually and determine its own HH data. The Supplier can use this data to bill the customer in a cost reflective way. This HH data will also be used in Settlement and for DUoS charging.

For metered customers, MHHS will utilise the HH data stored in the millions of smart and advanced meters.

3. Existing HH UMS arrangements

PECU and CMS controlled equipment react to the real time light levels, which vary in each local area based on the season and local environmental conditions.

CMS controlled equipment reports the switching/dimming times of individual lamps, which are used by the Meter Administrator (MA) to determine the energy consumption.

PECU Arrays used by larger unmetered customers to record the local weather/light levels have been used since 1995 to give an accurate representation of the local lighting levels, and the actual photocells in use by that customer. These Customer Specific PECU Arrays are installed across the country and are used by an Equivalent Meter to calculate HH consumption data based on the PECU switch on/off times recorded by the Array. This makes the energy consumption calculation for these customers more accurate on each day. The energy costs for all customers around dusk is particularly more variable than other times of the day, so the accurate allocation of energy at dusk is important.

Passive calculation uses a computer algorithm to determine sunset/sunrise times based on the customer's geographical location. Depending on the lux level of the respective PECU, national offsets are then applied to determine the daily switch on/off times for the PECUs. This algorithm has no capability to reflect the local weather conditions or the regional and seasonal offset differences across the country.

3.1. BSCP520 Obligation for provision of a Customer Specific PECU Array

BSCP520 has left it to each UMSO to determine whether any specific customer needs a Customer Specific PECU Array or whether their consumption may be calculated on a passive basis. The historical rationale for this approach is unclear. Although one reason may be that one company used an Equivalent Meter which did not support PECU Arrays, This software is no longer in use.

3.1.8	On Customer or Supplier request.	Request from the UMSO the type of EM (Passive or Dynamic) and agree the location, if any, of the PECU array(s) and other factors relevant to the PECU Array Siting Procedure in 4.6.1.1.	MA	UMSO.	
3.1.9	Within 5 WD of 3.1.8.	Agree the Sub-Meter ID(s), type of EM (Passive or Dynamic) and the location, if any, of the PECU array(s) in accordance with the provision of the PECU Array Siting procedures in 4.6.1.1. Provide latitude and longitude information to MA.	UMSO.	 MA.	Type of EM and agreed latitude and longitude or geographic co-ordinates.

The BSCP gives no guidance as to how the UMSO should determine whether a PECU Array is required or not. As a result of the lack of any detailed requirement in the BSCP there are a variety of approaches across all the UMSOs, ranging from the routine need for a Customer Specific PECU Array for “larger customers” to a complete disinterest and therefore no requirement.

When a Customer Specific PECU Array is required by the UMSO, the BSCP sets out requirement for the siting, population and maintenance of a PECU Array. The use of PECU Arrays was developed under the settlement arrangements in 1995.

3.2. BSCP520 Defect

The BSC sets out the requirements for the unmetered arrangements seeking to ensure a consistent approach across the industry/country, in this respect it requires the UMSO to decide whether to require a PECU Array for a customer but gives no clarity on how the UMSO should determine that decision. In recent years that has led to uncertainty for customers with a demand not far over 100kW. This defect results in the inconsistency of approach by UMSOs.

The BSCP520 requirements for a PECU Array should be clearly set out in the BSCP on a national basis to remove the current regional inconsistency.

4. Recommendation

We invite the UMSUG to:

a) **NOTE** the existence of a defect with BSCP520; and
b) **AGREE** to establish an UMSUG sub-group to consider the issue*.

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**Due to the implementation of the CP1546 at the end of June 2022, it is suggested any sub-group meeting should be held beyond mid-July.*