Redlined BSCP520 Unmetered Supplies Registered in SMRS changes for CP1368 'Changes to Clarify/Resolve Operational Issues Related to Unmetered Supplies Registered in SMRS'

The CP proposes changes to BSCP520 sections: 1.2.1(q); 1.3.8; 3.1.1; 3.1.7; 3.1.8; 3.1, 3.3.1.5; 3.3.1.11; 3.4.3; 3.6.1; 3.6.2; 3.9.1.1; 3.14.4; 4.1; 4.2; 4.3; 4.4.4; 4.5.1; 4.5.1.1; 4.5.2; 4.5.2.1; 4.5.3.1; 4.5.3.2.

We have redlined these changes against version 19.0 of the BSCP.

1.2.1 UMSO Responsibilities

Where an UMS has been agreed, each UMSO shall be responsible for the following:-

(a) where the inventory is subject to HH trading, providing a copy of the summary inventory to the appointed MA of an EM. Agreed updates to the summary inventory will be similarly passed to the appointed MA;

(b) providing Unmetered Supply Certificates;

(c) requesting additional MSIDs from the SMRA where additional inventory items need to be allocated to alternative SSCs and associated Profile Class and passing details of all MSIDs and the associated Meter Timeswitch Class and Profile Class to the Supplier for registration;

(d) where the inventory is subject to NHH trading, calculating initial and revised EACs and submitting them to the appointed Supplier and NHHDC;

(e) informing the Supplier of the type of EM (i.e. whether passive or dynamic) to be used in the LDSO's area;

(f) agreeing with the MA the location of any associated photo-electric cell unit (PECU) arrays in accordance with the siting procedures in 4.5.1.1;

(g) informing Suppliers and MA of the agreed latitude and longitude information for the installed Apparatus for each MSID where an EM is being used;

(h) providing any other additional information required to enable the Supplier to determine the Distribution Use of System (DUoS) charges;

(i) for supporting the Trading Dispute process as required by Section W of the Code;

(j) for responding to any queries raised by the Panel, Supplier, the Supplier Volume Allocation Agent, the Data Collector, the Meter Administrator and / or the BSC Auditor;

(k) providing Suppliers with the data that will enable them to fulfil their obligations under the Code;

(l) notifying Suppliers on discovering that any Settlement data for which the UMSO is responsible is potentially incorrect or missing;

(m) retaining Settlement data in accordance with this BSCP and Party Service Line (PSL) 100 'Non Functional Requirements for Licensed Distribution System Operators and Party Agents';

(n) ensuring that the Customer continues to comply with the conditions for an Unmetered Supply;

(o) issuing an annual spreadsheet containing all UMS EACs for each MSID split by Settlement Register (using the appropriate Average Fraction of Yearly Consumption) to Suppliers each June, and providing confirmation to BSCCo. that this process has occurred;

(p) resending the correct EAC(s) to the NHHDC upon instruction by the Supplier if Supplier identifies a discrepancy between EACs received from NHHDCs to those received from the UMSO; and

(q) validating all Charge Codes and Switch Regimes against the Operational Information Document (OID) and associated spreadsheets and the Valid Dimming Combination spreadsheet.

1.3.8 Half Hourly Trading

The Supplier shall appoint Party Agents and send the registration details to SMRA. In addition the Supplier shall nominate the MA as the Meter Operator Agent (MOA).

The Supplier shall appoint Party Agents and send the registration details to SMRA. In addition the Supplier shall nominate the MA as the Meter Operator Agent (MOA).

The Supplier shall advise the UMSO of the appointed MA. The UMSO shall send a copy of the current summary inventory to the MA appointed for an MSID for all non CMS controlled equipment. Where the UMSO requires more than one PECU array to be installed for an MSID, the summary inventory shall identify the Apparatus, suitably codified~~,~~ with a different Sub-Meter ~~to be~~ assigned to each PECU array. Where a CMS is required, the UMSO shall create and send a control file to the MA detailing the Apparatus that is to be managed by the CMS.

In addition, any agreed updates to the summary inventory or any control file shall be advised to the appointed MA.

3. Interface and Timetable Information

3.1 Establishment of a New UMS Inventory[1]

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.1.1		Agree that the application for UMS meets the requirements of Section 1.1. Validate all Charge Codes and Switch Regimes against the Operational Information Document (OID) and associated spreadsheets and the Valid Dimming Combination spreadsheet. Agree the inventory of Apparatus with the Customer. ~~Agree that the application for UMS meets the requirements of Section 1.1 and receive and agree the inventory of Apparatus from the Customer.~~	UMSO.	Customer.	Signed UMS Connection Agreement. Customer's Approved Detailed Inventory.	Paper, fax or electronic media, as agreed.
3.1.2		Is UMS to be traded HH? If so, proceed to 3.1.3. If UMS not HH, proceed to 3.1.17.	UMSO.		Notification received from Supplier or Customer.	Internal Process.
3.1.3	If HH.	UMSO request new MSID.	UMSO.	SMRA.	P0171 Request Creation of UMS Skeleton SMRS Record.	Paper, fax or electronic media, as agreed.
3.1.4		SMRA Allocate MSID per UMS Certificate.	SMRA.			Internal Process

[1] This process shall be followed where a new additional inventory is provided by the Customer.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.1.5		Create skeleton, record details of MSID in accordance with BSCP501. Send MSID(s) to UMSO.	SMRA.	UMSO.	P0171 Request Creation of UMS Skeleton SMRS Record.	Internal Process. Paper, fax or electronic media, as agreed.
3.1.6		Complete UMS Certificate. Issue to Customer. Issue to Supplier, if appointed by the Customer earlier on in the process	UMSO.	Customer, Supplier.	P0170 HH Unmetered Supply Certificate.	Internal Process. Paper, fax or electronic media, as agreed.
3.1.7	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 4.5.1.1.	MA	UMSO.	P0176 Request for EM Details.	Paper, fax or electronic media, as agreed.
3.1.8	Within 5 WD of 3.1.7	Agree the 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 4.5.1.1. Provide latitude and longitude information to ~~Supplier and~~ MA.	UMSO.	~~Supplier.~~ ~~Supplier,~~ MA.	Type of EM and agreed latitude and longitude or geographic co-ordinates in the event of Passive HH Trading. ~~P0068 UMS EM Technical Details.~~	Paper, fax or electronic media, as agreed.
3.1.9		Send Supplier and registration details to SMRA.	Supplier.	SMRA.	D0055 Registration of Supplier to Specified Metering Point. Including MA MPID in MOA Id data item (J0178)	Electronic or other agreed method.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.1.10		Record details for MSID in accordance with BSCP501.	SMRA.			Internal Process.
3.1.11		Send appointment details and additionally EM details to relevant recipients.	Supplier.	MA. HHDC. HHDA.	D0155 Notification of new Meter Operator or Data Collector Appointment and Terms. D0148 Notification of Change to Other Parties. D0155 Notification of new Meter Operator or Data Collector Appointment and Terms. D0148 Notification of Change to Other Parties. D0153 Notification of Data Aggregator Appointment and Terms.	Electronic or other agreed method.
3.1.12	Within 5 WD following 3.1.11.	Send Summary Inventory details to MA.	UMSO.	MA.	P0064 Summary Inventory (for Half Hourly Trading) and/or CMS Control File as appropriate.	Paper, fax or electronic media, as agreed.
3.1.13	Within 5 WD validate Summary Inventory against OID. If inventory fails validation.	Reject Summary Inventory and await new Summary Inventory.	MA.	UMSO.	List of invalid codes and/or Invalid Dimming Combinations.	Electronic or other agreed method.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.1.14	If Summary Inventory passes validation.	Input into EM and send copy of Summary Inventory extracted from the MA System to UMSO and to Customer.	MA.	UMSO, Customer.	P0064 Summary Inventory (for Half Hourly Trading).	Internal Process. Paper, fax or electronic media, as agreed.
3.1.15	If unable to send HH data before SSD.	Inform the Supplier of an EM fault (as set out in 3.14.1).	MA.	Supplier. HHDC.		Electronic or other agreed method.
3.1.16	Prior to SSD or Energisation Date whichever is later.	Liaise with HHDC to ensure data from EM can be processed.	MA.	HHDC.	D0003 Half Hourly Advances or Section 4.5.4 EM Output File[2] (trial data see 3.15).	Electronic or other agreed method.
3.1.17	After 3.1.2 for NHH.	Request new MSID per SSC.	UMSO.	SMRA.	P0171 Request Creation of UMS Skeleton SMRS Record.	Paper, fax or electronic media, as agreed.
3.1.18		Allocate MSIDs per SSC per UMS Certificate. Create skeleton record details of MSIDs in accordance with BSCP501.	SMRA.			Internal Process.
3.1.19		Calculate EACs, complete UMS Certificate. Issue UMS Certificate to Customer and Supplier if appointed earlier on in the process.	UMSO.	Customer, Supplier	P0207 NHH Unmetered Supply Certificate.	Internal Process. Paper, fax or electronic media, as agreed.
3.1.20		Send Supplier and registration details to SMRA for all listed MSIDs.	Supplier.	SMRA.	D0055 Registration of Supplier to Specified Metering Point.	

[2] The EM Output file can only be used if a secure method of data transfer has been agreed between the MA and the HHDC,

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.1.21		Record details for all of the MSIDs in accordance with BSCP501.	SMRA.			Internal Process.
3.1.22		Send appointment details.	Supplier.	NHHDC. NHHDA.	D0148 Notification of Change to Other Parties. D0155 Notification of new Meter Operator or Data Collector Appointment and Terms. D0153 Notification of Data Aggregator Appointment and Terms.	Electronic or other agreed method.
3.1.23		Send split EAC, Profile Class and SSC details for each MSID.	UMSO.	Supplier, NHHDC.	D0052 Affirmation of Metering System Settlement Details.	Electronic or other agreed method.
3.1.24	On receipt of D0052.	Validate D0052.	NHHDC		In accordance with BSCP504 Non-Half Hourly Data Collection.	Internal Process.
3.1.25	If D0052 is invalid.	Send notification of invalid Metering System Settlement details.	NHHDC	UMSO, Supplier	D0310 Notification of Failure to Load or Receive Metering System Settlement Details.	Electronic or other agreed method.

3.3 Change of Supplier

3.3.1 Half Hourly Trading

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.3.1.1	By SSD – 1 WD.	Establish with the UMSO that the UMS meets the requirements of Section 1.1.	New Supplier.	UMSO.	UMS Connection Details.	Paper, fax or electronic media, as agreed.
3.3.1.2		Send agreed UMS Certificate	UMSO	New Supplier	P0170 HH Unmetered Supply Certificate.	Electronic or other agreed method.
3.3.1.3		Send Supplier and registration details to SMRA for all listed MSIDs.	New Supplier.	SMRA.	D0055 Registration of Supplier to Specified Metering Point.	Electronic or other agreed method.
3.3.1.4		Send appointment details to relevant recipients.	Supplier.	HHDC. HHDA. MA.	D0148 Notification of Change to Other Parties. D0155 Notification of New Meter Operator or Data Collector Appointment and Terms. D0153 Notification of Data Aggregator Appointment and Terms. D0155 Notification of New Meter Operator or Data Collector Appointment and Terms. D0148 Notification of Change to Other Parties.	Electronic or other agreed method.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.3.1.5	If Change of Supplier concurrent with changes to EM or PECU Array siting	Agree the 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 4.5.1.1. Provide latitude and longitude information to ~~Supplier and~~ MA.	UMSO.	~~Supplier,~~ MA.	Type of EM and agreed latitude and longitude or geographic co-ordinates in the event of Passive HH Trading.~~P0068 UMS EM Technical Details.~~	Paper, fax or electronic media, as agreed.
3.3.1.6	If New MA	See Sections 3.4.3 to 3.4.5				
3.3.1.7	If New DC	See Sections 3.5.2 to 3.5.3				
3.3.1.8		Send appointment termination details.	Old Supplier.	Old MA. Old HHDC. Old HHDA.	D0151 Termination of Appointment or Contract by Supplier.	Electronic or other agreed method.
3.3.1.9		Send summary inventory details to MA. See Section 3.4.3	UMSO.	MA.	P0064 Summary Inventory (for Half Hourly Trading) and/or CMS Control File as appropriate.	Paper, fax or electronic media, as agreed.
3.3.1.10		Reject summary inventory, listing invalid codes and/or Invalid Dimming Combinations to the UMSO and continue to use or re-apply previous inventory.	MA.	UMSO.	List of invalid codes and/or Invalid Dimming Combinations.	Internal Process Paper, fax or electronic media, as agreed.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.3.1.11	If New MA, Prior to SSD or Energisation Date whichever is later.	Liaise with HHDC to ensure data from EM can be processed.	MA.	HHDC.	~~P0068 UMS EM Technical Details.~~ D0003 Half Hourly Advances **OR** Section 4.5.3 EM Output File[2] or trial data (see 3.15).	Electronic or other agreed method.
3.3.1.12	If concurrent with change of MA	Liaise with old HHDC to ensure data from EM can be collected up to end date.	Old MA.	Old HHDC.	P0173 Confirmation of End Readings Date.	Electronic or other agreed method.

3.4 Change of MA

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.4.1		Send details of appointed MA.	Supplier.	HHDC. New MA.	D0148 Notification of Change to Other Parties. D0148 Notification of Change to Other Parties. D0155 Notification of New Meter Operator or Data Collector Appointment and Terms.	Electronic or other agreed method.
3.4.2		Send appointment termination details to old MA.	Supplier.	Old MA.	D0151 Termination of Appointment or Contract by Supplier.	Electronic or other agreed method.
3.4.3		Send New MA details to SMRA	Supplier.	SMRA.	D0205 Update Registration Details Including MA MPID in MOA Id data item (J0178)	Electronic or other agreed method.
3.4.~~3~~4		Send Summary Inventory details to MA.	UMSO.	New MA.	P0064 Summary Inventory (for Half Hourly Trading) and/or CMS Control File as appropriate.	Paper, fax or electronic media, as agreed.
3.4.5~~4~~		Request sufficient information to enable the incoming MA to assume responsibility for the SVA Metering System. This data may exclude that data provided by the Supplier pursuant to paragraph 1.2.4.1.	New MA.	Old MA.	As agreed.	Electronic or other agreed method.
3.4.6~~5~~		Transfer information.	Old MA.	New MA.	As agreed.	Electronic or other agreed method.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.4.7~~6~~	On appointment.	For each SVA Metering System, use the EM to determine the HH kWh consumption (and kVArh if requested by the UMSO) by MSID.	New MA.			Internal Process.

3.6 Change of Measurement Class

3.6.1 Change from Non-Half Hourly to Half Hourly Trading or from Half Hourly to Non-Half Hourly Trading

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.6.1.1		Supplier to apply to UMSO for a new UMS Certificate.	Supplier.	UMSO.		Paper, fax or electronic media, as agreed.
3.6.1.2		Follow Establishment of a New UMS Inventory as set out in (3.1).				
3.6.1.3		For previously existing MSID(s) follow de-energisation and Disconnection processes as set out in (3.7) and (3.8) respectively.				

~~3.6.2 Change from Half Hourly to Non-Half Hourly Trading~~

~~REF.~~	~~WHEN~~	~~ACTION~~	~~FROM~~	~~TO~~	~~INFORMATION REQUIRED~~	~~METHOD~~
~~3.6.2.1~~		~~Supplier to apply to UMSO for a new UMS Certificate.~~	~~Supplier.~~	~~UMSO.~~		~~Electronic or other agreed method.~~
~~3.6.2.2~~		~~Follow Establishment of a New UMS Inventory as set out in (3.1).~~				
~~3.6.2.3~~		~~For previously existing MSID follow de-energisation and Disconnection processes as set out in (3.7) and (3.8) respectively.~~				

3.9.1 Half Hourly Trading

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.9.1.1	As agreed with Suppliers schedule.	Produce~~,~~ ~~and~~ validate or recalculate[3] metering data from the EM for each MSID for each Settlement Day.	MA.			Internal Process.

[3] Recalculation of metering data will be required from time to time as more accurate data becomes available such as revised Summary Inventories, CMS Control Files, PECU Array data, CMS Event logs (limited to 28 days) and correction of standing data errors.

REF.	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.9.1.2	At such time as to allow the HHDC to collect the data and carry out its obligations to ensure that the correct data is used for the purpose of the Initial Volume Allocation Run.	MA to notify HHDC of metering data.	MA.	HHDC.	D0003 Half Hourly Advances **OR** Section 4.5.4 EM Output File[2].	Electronic or other agreed method.
3.9.1.3	If data is missing or invalid.	Resolve any missing or invalid data with MA.	HHDC.	MA.	D0004 Notification of Failure to Obtain Reading.	Electronic or other agreed method.
3.9.1.4		Re-send EM Output File	MA	HHDC	Section 4.5.4 EM Output File (re-send data). D0003 Half Hourly Advances OR Section 4.5.4 EM Output File[2]	

3.14 Equivalent Meter Fault Reporting[4] - Investigating Inconsistencies

REF	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
3.14.1	When a potential or inconsistency is identified for which the MA is responsible, which means that data may be or is missing and/or incorrect.	Advise of the potential for a fault or inconsistency.	Any Participant.	Supplier, HHDC. MA.	Details of the potential fault.	Electronic or other agreed method.
3.14.2	Within 5 WD of identification of a potential fault.	Investigate the potential fault and rectify it as required.	MA.			Internal Process.
3.14.3	As soon as reasonably practical following 3.14.2.	Report the fault and the dates covered by the fault and the date and time of rectification.	MA.	Supplier, UMSO, HHDC.	Details of the fault, including the dates covered by the fault and the date and time of rectification.	Electronic or other agreed method.
3.14.4	Following 3.14.2, where it is possible to re-run the EM system to rectify the error.	Send corrected data in accordance with 3.9.1.1~~.~~.	MA.	HHDC.	Corrected data, D0003 Half Hourly Advances **OR** Section 4.5.4 EM Output File.	Electronic or other agreed method.

[4] Failures related to PECU arrays are covered in 4.5.1.2.

4. Appendices

4.1 Categories of Unmetered Apparatus

Note that the categories of Unmetered Apparatus can be found in the OID and associated Charge Codes may be found on the Charge Codes and Switch Regimes in the Operational Information Charge Code spreadsheet.

4.2 Switch Regimes

Note that the Switch Regime is described in the OID and a complete list may be found on the Charge Codes and Switch Regimes~~BSC Website~~ in the Operational Information Switch Regime spreadsheet.

4.3 Valid Dimming Combinations

Note that a Valid Dimming Combination is described in the OID and a complete list may be found on the Charge Codes and Switch Regimes~~BSC Website~~ in the Operational Information Valid Dimming Combination spreadsheet.

4.4.3 Calculation of EACs for Temporary Supplies

Where an MSID is allocated for a temporary UMS which is being used for up to 3 or 4 periods of the year only (e.g. Christmas lighting), the EAC shall be calculated as if it was connected throughout the year. For avoidance of doubt it should be noted that the Settlement processes will not settle the full amount of the annualised EAC but a proportion of the EAC that relates to when the MSID is energised. It shall be assumed that there are 365 days in the year, i.e. leap years shall be disregarded and the calculation therefore is as follows:

EAC = Charging Code Circuit Watts x Daily Burning Hours x 365

This EAC should then be split according to the percentages for a continuous (Category A) supply as shown in section 4.3

The appointed Supplier shall follow the energisation and de-energisation procedures at the time(s) of connection and disconnection respectively to reflect the actual usage. Note that the process above is distinct from temporary supplies connected and disconnected frequently throughout the year on a random basis (e.g. temporary traffic lights), where the EAC shall be calculated using the agreed number of annual operating hours, in consultation with the Customer.

4.4.4 Consumption Adjustments following LDSO Inventory Audits

Where an audit of a customer's inventory has been undertaken by the LDSO in accordance with the best practice document: Managing Unmetered Energy Street Lighting Inventories (MUESLI) published on the Institute of Lighting Professionals website:

ILP Website

Then the Customer will be deemed to have agreed that the revised inventory of Apparatus calculated by the LDSO relative to that particular Unmetered Supply is that agreed between the LDSO on whose Distribution System or Associated Distribution System the Unmetered Supply takes place and the Customer taking such supply as defined in paragraph 8.2.4 of Section S8 of the BSC.

The LDSO shall then review and adjust (if appropriate) the customer's EACs, for NHH Settlement, or Summary Inventory, for HH Settlement, as defined within the best practice document.

4.5 Equivalent Meter Specification

The specification below is insufficient for a Code of Practice but describes the required functionality of Equivalent Meters used to provide Settlement consumption data for Unmetered Supplies.

New hardware and software systems complying with the relevant sections of this Appendix 4.5 may be developed and submitted to the UMSUG and the Panel for approval in accordance with Section 3.13 Approval of New Equivalent Meter. Once approved, a system may be used in conjunction with any other hardware and software so long as there is no material impact on the Equivalent Meter's original approval. Where such impact is believed to be material, further approval should be sought.

It should be noted that with regard to dynamic meters using CMS Data, approval may be sought for either:

- A dynamic meter, i.e. a system that meets the requirements of an MA system as specified in 4.5.2.3 (e.g. that it can accept the files described in 4.5.2.3 a) and 4.5.2.3 c));
- A CMS, i.e. a system that meets the requirements of a CMS as specified in 4.5.2.3 (e.g. that can produce the file described in 4.5.2.3 c)); or
- A system that combines the functions of a CMS and a dynamic meter MA system in a single application, i.e. that meets all the requirements as specified in 4.5.2.3).

A list of approved Equivalent Meter types can be found on the BSC Website.

4.5.1 Hardware - PECU Arrays

Equivalent Meters undertake the calculation as defined below:

For the Summary Inventory effective on the relevant day for that Sub-Meter, for either:

- each CMS controlled item, or
- each Charge Code & Switch Regime combination

multiply the number of items by the circuit watts (full or dimmed as appropriate) for the relevant Charge Code by the seconds attributable (full or dimmed as appropriate) to the Switch Regime and divide by 1,000 to determine the kWh in each half hour.

For each Sub-Meter, the seconds attributable to the Switch Regime in each half hour are derived, in order, from:

(1) For CMS controlled items, the switching times and power level information in the event file (as defined in 4.5.2.3 c)) received from the CMS System (or where events have not been received at the time of the calculation, default arrangements defined in section 4.5.2.3 g);

(2) For PECU Array determined items, the switching events recorded by the PECUs representing the Switch Regime in the Primary PECU Array (or the Secondary PECU Array where data from the Primary Array is not available and where a Secondary Array is defined) which passes validation (4.5.2.2 d). Where data is not available from the Primary or Secondary PECU Array, switching times from the default Switch Regime shall be used in accordance with 3 & 4 below;

(3) For items with a Switch Regime not determined by a PECU Array but linked to the sunset/sunrise times, then the times as defined by the Switch Regime in conjunction with the Astronomical Almanac (4.5.2.1 e); or

(4) For items with fixed switching times, then those times defined by the Switch Regime.

For each MSID, sum the kWh for each combination described above for each Sub-Meter, round the calculation to one decimal place.

Repeat for each half hour of the Settlement Day.

An identical process shall occur for kVArh data (4.5.~~2~~3.1 (f)~~f~~ & 4.5.~~2~~3.3 (d)).

Note: The EM will log all switching actions to at least the nearest minute.

4.5.1.1 PECU Array Siting Procedure

Overview

The MA shall maintain and operate the PECU array or, as the case maybe, PECU arrays used for a particular SVA Metering System. The siting of the PECU arrays will be agreed between the UMSO and the MA and be located in an area with a high density of apparatus unless otherwise agreed between the UMSO~~,~~ and the MA ~~and the Supplier~~.

Siting Factors

The factors to be considered when determining the location and number of PECU arrays are:

(a) Centres of population and hence concentrations of load;

(b) Distance from another PECU array;

(c) Topography;

(d) Customer boundaries;

(e) GSP Group boundaries;

(f) Total load controlled; and

(g) Access

Sharing PECU Arrays

One PECU array may provide data for more than one EM. Also, more than one PECU array may provide data for the same EM. There will be instances when one PECU array will service the requirements of part of, or more than, one Customer.

Where a shared PECU array is being used by two or more different MAs, then one should take the lead and ensure that the others are informed of any changes to PECUs or other details.

Determining the Use of Multiple or Single PECU Arrays

The number of PECU arrays may be subject to decisions on the number of PECU types that can be populated in the PECU array. More than one PECU array may be required if the population of PECUs for a customer cannot be reasonably represented on a single PECU array of 30 PECUs. Furthermore, the size of the customer's area might require more than one PECU array to facilitate accurate calculation of Burn Hours. It is possible for the Meter Administrator to calculate the Annual Burn Hours for any latitude and longitude. If the differences between the proposed Array sites are very small (i.e. less than +/- 2%) then this would suggest that one Array should be sufficient. If actual Burn Hours are available for existing Arrays this data could also be used.

Research

The following ~~R~~research may be carried out ~~on~~ to inform the siting of PECU ~~arrays~~arrays:~~, by measuring:~~ ~~concurrent lux level readings at adjacent locations for a month.~~

If there is latitude and longitude information contained in the customer's detailed inventory for each item of Equipment, then it should be possible for the UMSO (and/or MA) to perform a load weighted longitude/latitude calculation to determine the ideal location of a single PECU array.

Where detailed Equipment location is not known, then it is possible to perform the calculation described above using published population numbers for the major towns in the customer's area.

PECU Array Variations

In considering any variation of the number of PECU arrays as stated in the overview paragraph above, the parties shall have due regard to the need:

(a) to reasonably minimise costs;

(b) to achieve the required accuracy in each half hour.

If a variation in the number and location of PECU arrays is proposed by the ~~Supplier~~ MA but is not agreed by the UMSO research may be carried as stated above. While such research is carried out and during any period of discussions, a supply in accordance with this BSCP may be commenced on the basis of the lesser of the number of PECU arrays proposed.

Failing any agreement after research and discussion the matter may be referred to the Panel for resolution.

4.5.2 PECU Array Operating Procedure

Overview

Before a Supplier can provide the Customer with a Half Hourly Unmetered Supply the PECU array installations must be operational and a MA appointed. The PECU arrays must conform to the specification as set out in the paragraph Specification for PECU arrays.

Types of PECUs

There are different types of PECUs, with different operating characteristics. Therefore, so that the operation of the PECU arrays reflect reality:

(a) PECUs used in the PECU array are to be representative of type, manufacturer and age of the population they are representing.

(b) The PECUs in the PECU array are to be proportional to the various types in the area covered by the PECU array.

(c) The number and types of PECUs will be determined by the MA in accordance with this section.

PECU Representation in Equivalent Meter

The operation of each PECU is deemed to be proportional to the population on the PECU array of that type of cell, e.g. if there are 8 cells of one type, then the operation of each one will represent the operation of one eighth i.e. 12.5% of the load controlled by that type of cell.

Where the calculation indicates that the load controlled requires less than one PECU in the PECU array, it may be omitted from the PECU array (and default arrangements should then apply). Where the calculation indicates that the load controlled requires more than one PECU in the PECU array, it shall be populated with at least two PECUs.

Multiple PECU Arrays

If more than one PECU array is used per Inventory, then the operation of a PECU cell is deemed to be proportional to the population of that type of PECU controlled load within the area covered by that PECU array. Therefore, where more than one PECU array is used per inventory, the inventory must identify which PECU array is controlling each item.

PECU Array Maintenance and Upkeep

Each PECU array shall be installed, maintained and operated in accordance with Good Industry Practice and the accuracy of its clock be maintained within +/- 20 seconds.

The MA shall monitor the performance of the ~~PECU Array~~PECU arrays.

Where the monitoring of the ~~PECU Array~~PECU arrays indicates that a single PECU is out of line with other PECUs of identical type in the same ~~PECU Array~~PECU array to such an extent that the PECU is no longer representative then such PECUs shall be removed from the calculation and a retrospective calculation will be made using the remaining cells. Failed or unrepresentative PECUs should be replaced at the next available opportunity.

At least annually, or in the event of a significant change to the Summary Inventory, the MA shall ensure that the ~~PECU Array~~PECU arrays are populated with PECUs in accordance with this section.

PECU Array Failure

If PECU data is not available then data from an appropriate PECU array or default data shall be used.

In the event of data recovery the MA will rerun EM and submit the corrected meter readings to the HHDC.

4.5.2.1 Minimum Specification for PECU Arrays

Number of Photocells per PECU array	30
Arrangement of Cells	Any arrangement which ensures no over shadow of one cell on another.
Mounting Platform	Flat platform which can be fitted on a flat roof or supported on a single upright for wall mounting. All the construction must be coated with a weather coated finish.
Mounting for Photocells	NEMA photocell sockets and 6 blanking plates to cater for miniature cells where required, in a waterproof housing.

Waterproof Housing	All equipment externally located must be protected by a weatherproof enclosure.
Data Collection	To capture the switching on and off times of each cell together with the Lux level at time of operation for a minimum of 7 days and 28 events per cell. Rolling Barrel (data overwrites once the logger is full).
Clock or time counter	The data collector must be accurate to +/- 20 seconds / month, which is checked by the EM at the time of contact.
Operating Temperature	-20 to +50 degree Celsius.
Lux Meter	Recording the illumination level at time of switching.
Communication Protocol	Determined by the EM to permit interrogation for remote data collection.

4.5.3 Equivalent Meter Functionality

Equivalent meters are of two types:-

(a) Passive meters which allocate the Unmetered consumption across the half hourly periods by a mathematical relationship of annual burning hours to the daily time of sunrise and sunset; and

(b) Dynamic meters which allocate the Unmetered consumption across the half hourly periods by reference to the operation of a number of actual PECUs, or by making use of actual switching times reported by a Central Management System. In either case the equivalent meter defaults to a passive mode using calculated times of switch operation in the event of the actual switching times not being available.

4.5.3.1 Functions of a Passive Meter.

(a) The Meter Administrator shall be able to add, delete and modify all information required to define each MSID and to relate it to the Customer, LDSO, Supplier and Data Collector.

(b) The Meter Administrator shall be able to add, delete and modify summary inventory data for each MSID both manually and electronically. Summarised inventory data shall comprise:

MSID;

Effective From Date;

Inventory title and/or reference;

Charge Code;

Switch Regime;

Total number of units of each Charge Code/Switch Regime combination.

(c) The Meter Administrator shall be able to add, delete and modify Charge Code and their associated circuit watts and circuit Volt Amperes reactive (VArs) for both full load circuit loading and dimmed load ratings as appropriate.

(d) The Meter Administrator shall be able to add, delete and modify Switch Regimes and their associated operating times. The system shall be populated using the offsets and fixed times defined in the OID associated spreadsheets for each Switch Regime.

(e) The system shall use the average latitude and longitude information and a sunrise/sunset algorithm to calculate the time of sunrise and sunset for each day within two minutes of the sunrise and sunset times as derived from the Astronomical Almanac.

(f) The system shall calculate, as defined in 4.5.1, the import kWh and import kVArh in each half hour period in UTC for each MSID.

(g) The system shall provide secure access for HHDCs, Suppliers and Customers to only that data which is relevant to them.

(h) The system shall provide an output file in the format shown in 4.5.4 for provision ~~to the~~to the appointed HHDC.

(i) The system shall provide an audit trail of changes to data held.

4.5.3.2 Functions of a Dynamic Meter using PECU Data

In addition to the functions of a passive meter listed above, the following are required for a dynamic meter using PECU data:-

(a) The system shall be able to use any one PECU array for the calculations of more than one MSID.

(b) The system shall be able to use more than one PECU array for the calculations of one MSID.

(c) In the event that a PECU in a PECU array fails to operate, the system shall compensate in its calculations by dividing that portion of load allocated to the faulty cell between the functioning cells of the same type as the failed cell.

(d) If PECU array data is not available for any day then a data from an alternative specified PECU array shall be used for the calculations. If that data is not available then default PECU Switch Regime shall be used. ~~The regime will be~~

~~defined by the MA as an offset from sunrise and sunset, derived as for a Passive Meter.~~ The appropriate default Switch Regimes are defined in the OID associated spreadsheets.

(e) The system shall maintain details for each PECU in a PECU array relating to location, type, manufacturer, date of manufacture and model number.

(f) The system shall be able to download data from the PECU array.

(g) The system shall monitor PECUs on the PECU array and advise the MA of any failed units.

(h) The system shall monitor the PECU array second counter for time keeping and advise the MA when the deviation exceeds the warning level.

(i) The MA shall be able to produce switching times from a decoded PECU array file.

(j) The system may provide a facility to apply time switch operations in accordance with a normal distribution about the nominal switching times. The standard deviation of the normal distribution shall be set by the MA.

(k) The system shall provide facilities to retrospectively recalculate data for re-submission to Data Collectors.

(l) The system shall be synchronised to UTC.