Change Proposal – BSCP40/02	CP No: 1166 *Version No: 3.0* *(mandatory by BSCCo)*

Title *(mandatory by originator)*
Changes to allow use of inbound communications for CoP5 Metering

Description of Problem/Issue *(mandatory by originator)*

Most of the current communications technology for the Half Hourly (HH) market is based on Meter data being collected by a central system using an 'outbound' approach, where a central system initiates a dialogue with the Meter. As a result, many of the relevant equipment definitions and process descriptions in the Codes of Practice and BSC Procedures are directly associated with a Meter interrogation activity, when in fact the key requirements are for the robust storage and transfer of data.

In contrast, some smart metering makes use of an 'inbound' communications technology, where Meter data is transmitted to a central system automatically without the need of an initial data request. While the Meter may still be subject to occasional remote or local interrogation, the majority of the HH data required for Settlement purposes would be received via the 'inbound' route.

This CP proposes to modify areas of Code of Practice 5 (CoP5) to allow this 'inbound' approach to be regarded as a legitimate method of communication for CoP5 Meters, i.e. those installed to meter energy transfers with a maximum demand of up to and including 1MW for Settlement purposes. Changes are also proposed to BSCP502 'Half Hourly Data Collection For SVA Metering Systems Registered in SMRS', BSCP601 'Appendix - Generic Test Specification - v2.0' and BSCP514 'SVA Meter Operations for Metering Systems Registered in SMRS' to ensure that data received from smart Meters via this route can be used within the HH Settlement processes.

Proposed Solution(s) (*mandatory by originator)*

CoP5

The following changes are proposed to CoP5 (comments in this section of the Change Proposal are in italics):

1 Scope

It derives force from the Code, and in particular the metering provisions (Section L, to which reference should be made. It should also be read in conjunction with the relevant BSC Procedures.

Nothing in this Code of Practice prohibits the use of technologies that deliver metering data to a Data Collector Agent provided the requirements of this Code of Practice are met.

This Code of Practice does not contain the calibration, testing and commissioning requirements for Metering Equipment used for Settlement purposes. These requirements are detailed in Code of Practice Four - "Code of Practice for Calibration, Testing and Commissioning Requirements for Metering Equipment for Settlement Purposes".

3.21 Outstation System

The change proposed to the definition below is such that it does not in any way inhibit the use of

new technologies and clarification has been provided so as not to change the meaning of the definition:

Outstation System means one or more Outstations linked to a single communication line. For clarification, where there is no physical communication line (i.e. SMS) the point of connection to the communication system shall be deemed as the communications line,

5.5 Outstation

The CoP5 Review Group recommended that any technology used for receiving inbound metering data from Outstations and for accessing Outstation data locally (to extract metering data for onward transmission) should undergo protocol approval to ensure the integrity of the data collected at the receiving end. This change is intended to emphasise this requirement:

An Outstation System shall be provided which transfers data to and receives data from a Settlement Instation.

The Outstation data shall be to a format and protocol approved by the Panel in accordance with BSCP601 'Metering Protocol Approval and Compliance Testing'.

The Outstation shall facilitate the metering data to be read by instations other than the Settlement Instation provided the requirements of clause 7 of this Code of Practice are satisfied.

The change below sets a minimum requirement for inbound technology such that metering data can be sent at least as frequently as the current minimum period for performing a mini Meter Advance Reconciliation (a 'mini-MAR' as described in section 4.1.5 of BSCP502). The second change is a recommended interim measure until such times as sufficient evidence can be presented to provide assurances that third party Outstation clock resets are reliable and accurate to Universal Co-ordinated Time (UTC):

Normally, metering data will be collected by the Settlement Instation by a daily interrogation, but repeat collections of metering data shall be possible throughout the Outstation data storage period.

Where metering data is transferred to the Settlement Instation automatically, the Outstation shall be capable of providing this data on a daily basis as a minimum. Time synchronisation of the Outstation shall be performed by the Half Hourly Data Collector communicating directly with the Outstation in accordance with BSCP 502 'Half Hourly Data Collection for SVA Metering Systems Registered in SMRS'.

If not integral with the Meter, a separately fused supply shall be provided for each Outstation.

5.5.3 Monitoring Facilities

Monitoring facilities shall be provided for each of the following conditions and shall be reported, as separate alarm indications, tagged to the relevant Demand Period(s), via remote ~~online~~ communications and the local Interrogation Unit:-

5.6 Communications

The following change is recommended in order to allow the appointed Half Hourly Data Collector (HHDC) to change the frequency at which data is sent by Outstations:

To prevent unauthorised access to the data in the Metering Equipment a security scheme, as defined below and in Appendix D, shall be incorporated for both local and remote access. Separate security levels shall be provided for the following activities:-

(i) ...

(ii) Level 2 – Password for:-

(a) corrections to the time and/or date; ~~and~~
(b) resetting of the MD; and
(c) programming of the schedule for automated transfer of Level 1 metering data.

5.6.2 Remote Interrogation

The proposed change to section 5.6.2 below is a reflection of one of the current technologies of choice for smart metering, which involves the use of SMS text messages over the GSM mobile phone network. However, the other changes proposed in this CP are more generic and will serve to accommodate any technology where data may be obtained from a Meter without an initiating action being required from a central system:

Remote interrogation facilities shall be provided with error checking of the communications between the Outstation System and the Settlement Instation.

It shall not be possible to disconnect the remote communications connection to/from the Outstation without the breaking of an appropriate seal (see clause 5.7).

Interrogation of an Outstation shall be possible using one of the following media:

(i) Switched telephone networks, e.g. PSTN or CTN;
(ii) Public data networks, e.g. PSN;
(iii) Radio data networks, e.g. GSM, Paknet or any equivalent;
(iv) Customer own network;
(v) Mains signalling / power line carrier;
(vi) Low power radio;
(vii) Satellite; or
(viii) Cable TV.

In addition any further media may be used as approved by the Panel.

The actual media employed shall be in accordance with the requirements of the CDCA for CVA Metering Systems and the Supplier for SVA Metering Systems. The data shall be to a format and protocol approved by the Panel in accordance with BSCP601 'Metering Protocol Approval and Compliance Testing'.

BSCP502 contains words which suggest a Meter is read and data is collected from HHMSs. The phrase 'Read Meter' should be replaced with the phrase 'Read and receive (where applicable) data from the MS'. Where * means:*

** i.e. where the MS Outstation is configured to send data automatically. In such cases, as a minimum, the HHDC must send the Meter period data obtained via interrogation to the HHMOA for comparison. Once the HHMOA confirms the proving test is successful, the HHDC must carry out an auditable check against the data received via inbound communication for the same 'proved' period. Any discrepancy must be investigated and the HHDC must only use data received via interrogation for Settlement until the discrepancy is remedied.*

The words 'collect' and 'collected' should be replaced with the words 'obtain' and 'obtained' throughout this BSCP to imply that Meter period data need not only be actively taken from the MS but can also be actively sent by the MS.

BSCP502 section 4.1 'Validate Meter Data' describes the validation processes to be carried out by the HHDC, however, many of the paragraphs in this section are worded specifically in the context of meter interrogation rather than general data receipt. These should be reworded so that they apply for any data received from an Outstation, whether automatically or via local or remote interrogation.

4.1 Validate Meter Data.

On receipt of the ~~collected~~ Meter period data the HHDC must perform validation to at least meet the following requirements:

4.1.1 Outstation Id (Device Id)

When the Outstation is interrogated, or when data is received from the Outstation automatically, the 'electronic serial number' of the ~~o~~Outstation is compared with that expected. If they differ then no data is collected (or processed further) and the failure is investigated in accordance with section 2.4.2.

4.1.2 Outstation Number of Channels

When the ~~o~~Outstation is interrogated, or when data is received from the Outstation automatically, the number of channels of the Outstation is compared with that expected. If they differ then no data is collected (or processed further) and the failure is investigated in accordance with section 2.4.2.

4.1.3 Outstation Time

Since time synchronisation of the Outstation will be performed by the Half Hourly Data Collector communicating directly with the Outstation (see proposed change to CoP5 Section 5.5 'Outstation') a footnote will be added to this section to cover inbound communication scenarios. The proposal of 20 days was approved by the Supplier Volume Allocation Group at it meeting in January 2007 (see SVG paper SVG72/06) and aligns with the minimum storage period and maximum permissible Outstation clock drift (20 seconds after 20 days of no communication) for a CoP5 Outstation.

When the Outstation is interrogated[29], the time of the Outstation is compared with that expected. If they differ by more than 20 seconds and less than 15 minutes then the ~~o~~Outstation time is corrected by the data collection system. If the time differs by more than 15 minutes then the problem is

resolved in accordance with section 2.4.2.

[29] Where data is received from the Outstation automatically then the Outstation shall be interrogated at least every 20 calendar days and such that the requirements set out in this section, 4.1.3, are met.

4.1.4 Alarms

When the Outstation is interrogated, or when data is received from the Outstation automatically, the individual alarms required by the relevant Code of Practice (CoP) shall be investigated if flagged. Some MSs may not have all the alarm flags specified in the relevant CoP, in which case a Dispensation under BSCP32 should exist.

Each alarm shall be investigated in accordance with section 2.4.2.

4.1.5 Cumulative/Total Consumption Comparison

When the Outstation is interrogated, or when data is received from the Outstation automatically, and where the Outstation provides an electronic cumulative reading of the prime register equivalent to the total consumption of the Meter at that point in time. Using these readings, the following checks will be performed at least every seven days (i.e. on a daily or weekly basis or as agreed by the Supplier and HHDC).

and also:

i) ...

M2 is the cumulative reading (in kWh) returned from the last time that the Meter was interrogated or data was received automatically; and M1 is the cumulative reading (in kWh) returned from the previous time that the Meter was interrogated or data was received automatically over the same time period as the sum of HH period energy.

BSCP601 Appendix - Generic Test Specification - v2.0

The generic test specification appendix 'Specification Compliance Testing of Metering Equipment Codes of Practice One, Two, Three and Five v2.0' to BSCP601 'Metering Protocol Approval and Compliance Testing' contains a series of tests and checks used by the Compliance Testing Agent to ensure that the requirements set out in the relevant CoPs are met by the Metering Equipment undergoing Compliance Testing. The following sections of this document will need to be updated to reflect the new requirements in CoP5:

Section 1. Definitions and Interpretations

The definition of 'Code of Practice Five' in will need to be updated with the new issue/version number and CoP5 effective date:

Code of Practice Five means Code of Practice Five: Issue ~~6~~7, version ~~4~~5.0; dated ~~3 November 2005~~ CoP5 effective date - CODE OF PRACTICE FOR THE METERING OF ENERGY TRANSFERS WITH A MAXIMUM DEMAND OF UP TO (AND INCLUDING) 1MW FOR SETTLEMENT PURPOSES.

Section 5.10 Outstation

Three new tests (checks) (g), (h) and (i) will need to be added to this section as follows:

(f)	The Outstation can provide all metered data stored from the time of commencement of any specified date upon request by the Instation during the data storage period of the outstation.	**053**
(g)	Establish whether the Outstation is capable of sending metering data automatically;	**054**
(h)	Verify that the metering data sent complies with section 5.15.1 'Level 1 Passwords' of this test specification; and	**055**
(i)	Establish whether the Outstation is capable of sending metering data on a daily basis as a minimum.	**056**

Section 5.15.2 Level 2 Passwords

The following test (check) will also need to be added under this section:

Using the Level 2 Password, establish that all the data listed at Level 1 can be retrieved and in addition that the following actions can be performed:		**~~100~~103**
(a)	changes to time and date; ~~and~~	**~~101~~104**
(b)	resetting of all Maximum Demands~~.~~; and	**~~102~~105**
(c)	where applicable, confirm it is possible to programme the schedule for automated transfer of Level 1 metering data via Level 2 access.	**106**

Note: Party Agents should be aware that new technologies used for delivering data to Settlements may impact re-qualification/certification.

BSCP514

BSCP514 section 5.5 'Proving a Metering System' sets out the interface and timetable information for the four methods that can be used to 'prove' a Half Hourly Metering System. Appendix 8 'Proving of Half Hourly Metering Systems' gives more detail about when and how proving tests should be undertaken, the timescales for carrying out a proving test (and re-testing following a failed proving test) and the reporting of successful and non-successful proving tests. Both of these sections of BSCP514 will need to be amended as shown to ensure that both outbound and inbound (where applicable) methods of communication are 'proved':

5.5 Proving a Metering System[28]

5.5.1Proving of a Metering System by Method 1[29]

REF	WHEN	ACTION	FROM	TO	INFORMATION REQUIRED	METHOD
5.5.1.3	Following 5.5.1.2	Read and receive (where applicable)* data from MS~~meter~~ for the same HH Settlement Period as requested by the HHMOA ~~using the same method as~~	HHDC		As a minimum the HHDC shall send ~~collect~~ the data required by the HHMOA, but may also ~~collect and~~ send more data than	Internal Process.

		~~would normally be used for the retrieval of data from that MS~~ (ensuring that data collected for the Settlement Period does not contain a zero value).			requested.	

** i.e. where the MS Outstation is configured to send data automatically. In such cases, as a minimum, the HHDC must send the Meter period data obtained via interrogation to the HHMOA for comparison. Once the HHMOA confirms the proving test is successful, the HHDC must carry out an auditable check against the data received via inbound communication for the same 'proved' period. Any discrepancy must be investigated and the HHDC must only use data received via interrogation for Settlement until the discrepancy is remedied.*

Section 5.5.2.4 (ACTION and INFORMATION fields) and section 5.5.3.3, 5.5.4.3 (ACTION fields only) will also need to be amended along similar lines to 5.5.1.3.

8.3.2 Methods of Proving

The HHMOA shall decide what method of proving test is appropriate in conjunction with the HHDC and has one of the four methods outlined below to choose from:

Complex Sites shall be proven in the same way as non Complex Sites except the HHMOA shall use the aggregated data provided by the MS for comparison.

Where the MS Outstation is configured to send data automatically HHDCs must obtain Meter period data via both interrogation (instation to Outstation) and inbound communication (Outstation to instation) methods. In such cases, as a minimum, the HHDC must send the Meter period data obtained via interrogation to the HHMOA for comparison. Once the HHMOA confirms the proving test is successful, the HHDC must carry out an auditable check against the data received via inbound communication for the same 'proved' period. Any discrepancy must be investigated and the HHDC must only use data received via interrogation for Settlement until the discrepancy is remedied.

Method 1

The HHMOA installs / reconfigures the MS and commissions the MS and records the HH Metered Data reading while on site. The HHMOA then requests the HHDC to collect HH Metered Data for the same Settlement Period as collected by the HHMOA. The HHDC then collects the HH Settlement Period requested and sends this raw HH Metered Data to the HHMOA for comparison.

Justification for Change *(mandatory by originator)*

The use of inbound technology for CoP5 Metering Systems will allow this area of the market to be metered at a significantly reduced cost without representing undue risk to the industry. This will increase the potential for HH metering and in doing so will increase the accuracy of data entering Settlement.

To which section of the Code does the CP relate, and does the CP facilitate the current provisions of the Code? *(mandatory by originator)*

This CP relates to and facilitates Section J: 'Party Agents' and the requirements for HHDCs to collect data.

1.2.2 In respect of Metering Systems (or SVA Metering Systems, as the case may be) for which a Party is the Registrant, the principal obligations and activities which that Party is required to perform through the use of a Party Agent (and which represent the functions of such Party Agent) are as follows:

(a) ...

(b) in the case of a Half Hourly Data Collector, to retrieve, validate and process metering data from Half Hourly Meters and Equivalent Meters in respect of SVA Metering Equipment in accordance with the provisions of Section S;

Estimated Implementation Costs *(mandatory by BSCCo)*

The estimate ELEXON implementation cost is £660.

Configurable Items Affected by Proposed Solution(s) *(mandatory by originator)*

CoP5 'Code of Practice for the Metering of Energy Transfers with a Demand of up to (and including) 1MW for Settlement Purposes'

BSCP502 'Half Hourly Data Collection for SVA Metering Systems Registered in SMRS'

BSCP601 Appendix - Generic Test Specification - v2.0 'Specification Compliance Testing of Metering Equipment Codes of Practice One, Two, Three and Five'

BSCP514 'SVA Meter Operations for Metering Systems Registered in SMRS'

Impact on Core Industry Documents or System Operator-Transmission Owner Code *(mandatory by originator)*

DTC Annex D – Changes to 'Item Description' and 'Notes' of the J1690 'Dial In/ Dial Out Indicator' data item as described in the Master Registration Agreement (MRA) DTC CP 'Modification of J1690 Dial In / Dial Out Indicator for 'Inbound' communication' (Attachment A). The DTC CP will be progressed if CP1166 V2.0 is approved.

Related Changes and/or Projects *(mandatory by BSCCo)*

None

Requested Implementation Date ***(mandatory by originator)***

February 2008 Release

Reason:

The February 2008 Release is the next available Release.

Version History ***(mandatory by BSCCo)***

Version 1.0 of CP1166 was raised by ELEXON on 17 May 2006 and was drafted on the basis of a proposal submitted to ELEXON by Stark Software International Ltd (HHDC and HHDA) via Scottish and Southern Energy (BSC Party). An industry impact assessment was issued via Change Proposal Circular, CPC00575 on 2 June 2006 and as a result of the responses received ELEXON recommended to the Supplier Volume Allocation Group (SVG) that a working group be set up to develop more acceptable solutions (see SVG paper SVG66/06 presented at the 1 August 2006 meeting). The areas of particular concern were Outstation clock synchronisation and data security arrangements. The SVG agreed with the recommendation to set up a working group.

The CoP5 'Inbound Communication' Review Group was established and met once on 21 September 2006 to discuss the issues of concern and provide solutions to them. In summary the group recommended that:

- the use of inbound technology should be optional but that the Outstations must be capable of being interrogated (via outbound communication). This recommendation was proposed to cover the Change of Agent process and to allow for time synchronisation of the Outstation by Settlement instations;
- Outstation clocks should be checked (and trimmed if necessary) by HHDC instations, via interrogation, on a regular basis (options for the frequency of these checks were presented to the SVG for decision);
- inbound data should be validated using the Data Transfer Catalogue data items, J0428 'Outstation ID' and J0385 'Communication Address' and changes should be made to the Data Item description and Notes fields for the J1690 'Dial In/Dial Out Indicator' data item to clarify that the use of 'O' indicates that the Outstation is capable of inbound communication; and
- bolt-on (to legacy Outstations) devices and software systems for use in Settlements for inbound communication and should undergo protocol approval.

On 30 January 2007 the SVG were invited (see SVG paper SVG72/06) to note the recommendations of the review group's and ELEXON's comments, determine the frequency for the interrogation of Outstations which use inbound communication methods and approve the progression of the draft version of CP1166 v2.0. The SVG approved the progression of the draft version of CP1166 v2.0 and recommended that HHDCs check Outstation clocks via interrogation at least every 20 days.

Version 2.0 of CP1166 was raised by ELEXON in March 2007 and issued for industry impact assessment via CPC00603 on 30 March 2007. Of the responses received, 8 agreed with the changes, 5 disagreed and 1 was neutral. After discussing the issues with respondents 9 agreed with the changes, 4 disagreed and 1 was neutral. The comments from the impact assessment highlighted some concerns with the CP in the following areas:

- further work is required due to the potential impact on the proving process as set out in BSCP514 'SVA Meter Operations for Metering Systems Registered in SMRS'. ELEXON has proposed some redline changes to BSCP514 for industry comment in this version (3.0) of CP1166; In summary, outbound communication shall be validated in the normal way which remains a minimum requirement irrespective of the technology. However for inbound communications where this is to be used for Settlement purposes, the data received by the HHDC via this route is required to be checked against that validated via outbound.
- there is concern with the proposal that HHDCs would be allowed (via level 2 password access) to

alter the frequency at which data is transferred from the Outstation to the Settlement instation. One respondent suggested that access to this schedule be moved to level 3 where Meter Operator Agents (MOA) and not HHDCs would be allowed to alter the frequency of data transfer (at level 2 both MOAs and HHDCs would be able to change the schedule). The justification put forward suggested that the Metering Equipment which delivers inbound data was a MOA responsibility and that HHDCs should not be able to impact the costs for inbound communication unless actioned via a MOA (or through contract arrangements). ELEXON has no particular view either way on this issue as this appears to be a commercial matter. ELEXON therefore proposes to leave the access to the data transfer schedule at level 2 (allowing both the MOA and HHDC access to the function) and allow participants to decide who is actually responsible for changes to the schedule at level 2.

- one respondent felt that more work was required to highlight that a Metering System was capable of inbound communication and suggested that the D0155 'Notification of Meter Operator or Data Collector Appointment and Terms' could provide early notification of this capability. Under the current proposal the J1690 'Dial In/ Dial Out Indicator' data item appears in the D0268 'Half Hourly Meter Technical Details' data flow (and others) and is an optional data item. The respondent also believed that it would be very useful to know which type of technology was employed by the inbound system to assess whether or not the system could be supported. ELEXON recommends further consultation to gauge support for additional work and associated costs on possible solutions for notification of inbound capability and any Data Transfer Catalogue impact assessment for such solutions.

- one respondent is concerned about interoperability issues. With current technology, manufacturers provide data access via the protocol which is employed by the HHDC in its data retrieval system. With new inbound technology however, the respondent is concerned that on Change of Agent (from an Agent that can support inbound technology to one than cannot) an incoming HHDC may not have access to the necessary protocol to support these Meter/Outstation types. Additional cost may be required to obtain the protocol. Additionally, having to send all level 1 data will increase costs as the number of text messages required will have to increase. ELEXON believes that although the costs of supporting outbound (or even inbound) technology may impact the use of Metering Equipment capable of using inbound technologies it is a commercial decision for individual Agents to make as to whether or not to support any type of Metering Equipment.

In summary, redline changes have been suggested to the proving process in BSCP514; access to the data transfer schedule will remain at level 2; and although interoperability may be a commercial issue, participants are not obliged to use the Metering Equipment they inherit on Change of Agent - Meters and/or their communication devices can always be changed. Finally, a specific consultation question will be asked during the impact assessment stage to gauge support for further work on notification of inbound technology and a recommendation will be made to the SVG based on those responses.

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Date……8 June 2007

Attachments: Yes - Proposed MRA DTC CP ‘Modification of J1690 Dial In / Dial Out Indicator for ‘Inbound’ communication’ (Attachment A)