Change Proposal – BSCP40/02	CP No: CP1204 *Version No:* 1.0 *(mandatory by BSCCo)*

Title *(mandatory by originator)* New charging code structure for Unmetered Supplies

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

The Supplier Volume Allocation Group (SVG) requested that ELEXON investigate potential amendments to the current Unmetered Supply (UMS) arrangements, in order to recognise the development of Central Management Systems (CMS) technology which allows greater accuracy in supply control. As part of this investigative work, an external review group was assembled which considered a number of solutions. Three options were developed, and presented to the SVG in paper SVG72/01. One of the options (option 2) proposed that the structure of the UMS charging code be changed to facilitate CMS technology.

Charging codes provide unique representations of UMS apparatus types, methods of control and power rating, and are used by:

a) Customers to provide the Unmetered System Operators (UMSOs) with details of the unmetered equipment which is connected to the distribution network;
b) UMSOs to calculate the EACs for Non Half Hourly Customers and to audit Customer's inventories; and
c) Meter Administrators to calculate the consumption for Half Hourly Customers.

UMS charging codes are approved by the Unmetered Supplies User Group (UMSUG) and the SVG, and are published by BSCCo.

The existing 7-digit numerical structure of the charging code allows representation of only 10 possible types of control gear (the equipment that controls the operation of the unmetered apparatus). For lighting equipment the control gear is digit '7' of the charging code, see structure below:

1,2|3,4,5,6|7

Digits	**Meaning**
1, 2	Apparatus type
3, 4, 5, 6	Nominal rating
7	Control gear

The review group concluded that an expanded or amended charging code structure was not required solely to accommodate CMS (CP1196 was progressed separately to address incorporation of CMS into the UMS arrangements). However, the review group did recommend further investigation of change to the structure of the charging code, because the existing charging code structure had been in use for over 20 years and an increased level of flexibility would accommodate a greater number of combinations of UMS apparatus and electronic control gear (and capture many different levels of control, e.g. dimming). At SVG72, the SVG considered the recommendations of the review group and agreed that a Draft Change Proposal (DCP) be raised to facilitate further discussion of possible changes to charging code structure.

The review group had agreed the following requirements for any new charging code structure:

1) Allow representation of anticipated types of new UMS equipment (apparatus and control gear) and running arrangements (multiple levels of dimming), in particular an ability to represent a number of different loads for the same nominal lamp and control gear combination. There

should also be an element of future proofing;
2) Maintain the existing structure, systems and codes. This would seek to minimise any impact on existing participants who may wish not to change their UMS equipment for new more efficient types and facilitate the transition from the existing to the new structure;
3) Allow participants to easily recognise all types of UMS equipment to enable construction of inventories and assist UMSOs in checking or producing summary inventories;
4) Not impact on quality of inventories and facilitate the auditing of inventories and seek to ensure that current audit issues are not made worse by increasing the complexity inventory management;
5) Recognise existing systems functionality in particular Equivalent Meter systems; LAMP, FLARE and Lailoken; and
6) Not adversely impact on the existing Half Hourly and Non Half Hourly trading arrangements.

On the basis of these requirements, the UMS review group developed two solution options which were presented for industry Impact Assessment (IA) in DCP0002:

1) Extending the length of the charging code to 12 digits and retaining the numeric format; and
2) Extending the length of the charging code to 11 digits and making the additional characters alphanumeric.

In addition to the requirements agreed by the review group, the following requirements for any change to the charging code were suggested by respondents to the DCP0002 IA:

1) Allow for overdriven operation (i.e. over 100% rated loading) of apparatus, e.g. in an emergency situation LED lighting may be operated at 110% loading in order to flood an area with light.
2) The DCP0002 IA asked participants how many dimming levels they believed should be permitted if solution 1 was progressed. Three respondents replied to this question:
    - One respondent suggested one dimming level per charging code (with a limit being placed on the number of charging codes to prevent it becoming unmanageable;
    - One respondent suggested around 5 dimming levels (and noted that there was a risk that the more dimming levels are allowed the more onerous the associated load research will be); and
    - One respondent suggested 10 dimming levels should be permitted, and that these dimming levels should be specific and time-banded.

A respondent to the DCP0002 IA proposed that consideration be given to retaining the 7 digit code length, but making the charging code alphanumeric, thus increasing the lamp type and gear type/dimming level combinations available The respondent stated that many organisations had affirmed that their systems already treat the code as alphanumeric (i.e. though only numbers currently appear in the charging code, systems store the code as text rather than numeric values, e.g. a code of '0100240' would not be stored as '100240'). The respondent felt this would therefore be a 'least change' solution. The effect on the charging code would be:

- Digits 1, 2: lamp type - more combinations;
- Digits 3,4,5,6: Nominal equipment rating in watts - no change;
- Digit 7: gear types/dimming levels - over 30 variants.

Another respondent suggested extending the code by 3 digits and making it entirely alphanumeric, such that the first 6 digits retain there current meaning (but can express many more lamp types) and the control gear is extended to 4 alphanumeric characters, increasing the number of available combinations.

Proposed Solution *(mandatory by originator)*

A majority of the 15 respondents to the DCP0002 IA supported change to the charging code. Of those respondents that expressed a preference between the solution options presented in DCP0002, a majority supported option 1, extending the length of the charging code to 12 digits (and keeping it numerical). However, the IA highlighted concerns that option 1 did not allow for overdriven operation of apparatus, and therefore it is proposed that the charging code is extended to 13 digits. The proposed charging code structure for standard lighting equipment[1] is therefore:

1,2|3,4,5,6|7,8,9,10,|11,12,13

Digits	Meaning
1, 2	Apparatus type
3, 4, 5, 6	Nominal equipment rating (watts)
7, 8, 9, 10	Control gear (allowing 10,000 control gear representations)
11, 12, 13	Percentage dimming: • '100' = full load circuit watts; • '110' = 110% of full load circuit watts (i.e. overdriven); and • '080' = 80% of full load circuit watts, etc.

It should be noted that UMS Customers would be able to choose whether to use this proposed new charging code or the existing code, but UMSOs and MAs would need to support both formats.

Main features:

- Existing codes and structure would not be altered and any Customers not using the new charging codes may not need to change their systems;
- Customers who wish to use dimming or newly developed control gear technology will need to amend their systems to produce detailed inventories incorporating 13 digit charging codes;
- The new structure is easily recognisable as it is the same as the old code with 6 digits on the end. This will assist in maintaining correct codes, simplify desk top auditing and simplify the conversion from the old code to the new code;
- The extension of the control gear code to four digits provides 10,000 combinations, and will enable manufacturers to be identified if necessary. This should ensure that the new structure is sufficiently flexible to handle future developments in technology;
- Percentage dimming as a level of the full load circuit watts is easily readable by participants and allows for overdriven (i.e. over 100%) operation of apparatus;
- UMSOs and Meter Administrators (MAs) will be able to accept inventories in either format;
- Maintaining the present structure should minimise the impact (and cost) to Customers as the charging code can continue to be built by linking the codes for individual items;
- Single stage dimming to any level can be accommodated on the existing Equivalent Meters. The inclusion of the dimming level within charge code enables the bright and dim load values to be entered into existing system tables. Consideration will need to be given to the number of

[1] Charging codes for traffic signals, motorway signals and miscellaneous type un-metered equipment employ a different structure. Currently digits 1,2 indicate the type (60 = traffic, 60 or 79 for motorway and 80 for miscellaneous), digits '3,4' indicate the sub-type (such as zebra crossings, CCTV cameras, bus shelters) and digits '5,6,7' the nominal rating. Therefore, any charging codes beginning with '60, '79' or '80' the 7th digit is part of the nominal rating and cannot be used to indicate a different control gear. For these codes digits '8, 9 and 10' will be used. Further information on existing codes can be found in the Operational Information Document Operational Information or current list of charging codes.

levels allowed. However, when a party applies for a new charging code evidence will need to be provided to support the percentage dimming power level;
- Can apply to Non Half Hourly Traded supplies. The programmes used by UMSOs to calculate Estimated Annual Consumptions (EACs) will need to be modified to accommodate single stage dimming; and
- All UMSO and MA computer systems will need modification to handle 13 digit charging codes.

Additional requirements resulting from DCP0002 IA:
- The charging code should allow overdriven operation of apparatus (hence expansion of the proposed extended code from 12 to 13 digits); and
- The number of dimming levels should be limited to a maximum of 10, and the number of charging codes created should also be limited on.

In addition to changes to BSCP520 (Attachment A), changes will be required in the following areas:
1) Operational Information Document:
   a) Section 2: to reflect the changes to the charging code described above;
   b) Section 4: the Standard File Format (SFF) for Detailed Inventories remains the same although the charging code length is increased;
2) Charging codes (xls and csv formats), to reflect the above changes in charging code and any new codes utilising the amended charging code structure; and
3) Manufacturer's Equipment Coding List and Manufacturer's Equipment Temporary Coding List, to reflect the above changes in charging code and any new codes utilising the amended charging code structure.

These changes do not need to be progressed through the change process as part of a CP, and will be made as part of the implementation of CP1204, if approved.

Justification for Change *(mandatory by originator)*

New types of electronic control gear are being developed by manufacturers which can give many different combinations of actual power consumption (circuit watts). Furthermore, the power consumption can vary by manufacturer of the control gear. In Europe, there are significant developments in this technology in order to save energy. Therefore, the existing 10 combinations cannot represent all these possible combinations.

New charging codes have been approved in 2006 which did not follow the existing structure as set out in the Operational Information document (see Operational Information). These newly approved codes employ a change to the Nominal rating part of the code to represent the different power consumption as determined by the new control gear that is available. One member of the review group believed that the current charging code structure cannot cope with requests for new codes now, as it in affect has run out of codes. If this approach was followed the easy identification of nominal ratings for apparatus could be lost.

Customers are seeking to make use of new types of control gear to achieve energy savings and reductions in CO_2 emissions and thereby meet government set targets. One manufacturer is releasing 3 different series of electronic ballasts with power ratings ranging from 75W-81W. A difference of 1W multiplied over thousands of installations will make a significant difference in power consumption.

Of the 15 respondents to the DCP0002 IA, 11 agreed that there should be change to the charging code, 2 disagreed and 2 were neutral. Respondents who agreed the change felt the charging code should be made more accurate, and noted that the present code might lead to inaccuracies in Settlement because

it cannot accurately reflect the operation of new, more dynamic apparatus.

To which section of the Code does the CP relate, and does the CP facilitate the current provisions of the Code? *(mandatory by originator)*
Section S 'Supplier Volume Allocation'.

Estimated Implementation Costs *(mandatory by BSCCo)*
£220 - 1 Man Day to implement the BSCP documentation changes.

Configurable Items Affected by Proposed Solution(s) *(mandatory by originator)*
BSCP520 'Unmetered Supplies registered in SMRS'.

Impact on Core Industry Documents or System Operator-Transmission Owner Code *(mandatory by originator)*
None identified.

Related Changes and/or Projects *(mandatory by BSCCo)*
CP1196 'Changes to incorporate Central Management Systems in Unmetered Supplies arrangements' resulted from the same investigation into the incorporation of CMS into UMS arrangements. CP1196 has now been approved for implementation in the February 2008 Release. The majority of the changes made to BSCP520 by CP1196 have no impact on this CP, but it has been necessary to amend the length of the UMS charge code in a section that CP1196 introduced, 4.5.2.3 a). This change is included in the extract of BSCP520 showing redlined changes, attached to this CP.

Requested Implementation Date ***(mandatory by originator)***
February 2008 Release.

Reason:

Version History ***(mandatory by BSCCo)***
This CP is a progression of DCP0002.

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Attachments: Y
CP1204 Attachment A - BSCP520 v11.0 redlined v0.3 (5 pages)