Smart Energy Code

SEC
Smart Energy Code

Stage 01: Modification Proposal

What stage is this document in the process?

SECMP0012

Channel selection to support Shared HAN solutions

This modification seeks to facilitate a channel selection capability so that Shared HAN infrastructure can be deployed cost effectively and efficiently in high density housing, using standard 2.4GHz equipment. Shared HAN infrastructure will form an important part of the overall suite of Alternative HAN technologies that will enable an estimated 2 million GB households to benefit from smart metering systems and near real time information on their energy consumption.

The Proposer recommends that this Modification should be:

- progressed as a Path 2: Authority Determined Modification

This Modification Proposal should be assessed by a Work Group

Medium Impact:
DCC, DCC Users

MODIFICATION PROPOSAL FORM V1.0

1. Proposer's Contact Details

Details of Proposer		Representative as Point of Contact
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Details of Representative's Alternate

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2. Modification Proposal Details

Mod Submission Date:	05/05/2016
Title of Mod Proposal:	Channel selection to support Shared HAN solutions

Description in Detail of the Proposed Modification:

The proposed modification seeks to enable channel selection at the mandated 2.4GHz frequency to facilitate the efficient provision, installation, operations and interoperability of Smart Metering Systems in premises where standard HAN solutions are unsuitable and Shared HAN solutions necessary. This will require changes to a number of industry documents that make up the Smart Energy Code, but it is worth pointing out that the ZigBee Smart Energy Profile facilitates channel selection and that DECC are already seeking to make similar changes at the additional 868MHz frequency to support the efficient deployment of dual band communications hubs in high density housing.

Channel selection at 868MHz will provide energy suppliers with the ability to react to interference and make best use of available communications capacity when forming smart metering HANs in densely populated areas. That same capability is required at 2.4GHz to ensure that Alternative HAN technologies that rely upon shared infrastructure can hone communications and leverage equipment in an optimum way.

In order to enable the setting of channels or channel masks (either at 2.4GHz or at 868MHz), the following changes

are needed:

1. Communications Hub Technical Specification to include the channel selection/mask, and associated commands.
2. Great Britain Companion Specification embedded documents to include channel selection/mask data elements and provision for the channel mask to be set.
3. DCC User Gateway Interface Specification Service Requests need modification, either:
   - A new service request for setting of the channel selection/mask on the CH.
   - Extension of SR 8.14 to permit setting of the channel selection/mask at CH commission time only
4. Smart Energy Code Section H5 and Appendix I

Since these changes will be required anyway to support 868MHz, it makes sense to apply them to 2.4GHz as well. As highlighted above, it is worth re-affirming that no ZigBee standards for 2.4GHz require modification, so the necessary changes are possible within the UK Smart Metering Programme specification document set.

3. Path Type and Urgency Recommendation

Proposer's recommendations on Path Type (delete as appropriate)	Path 2

Statement for recommended Path Type:

Please state the reasons behind your choice of Path Type, including whether you feel Authority Consent is or is not required.

Shared HAN technologies are a recognised element in the potential mix of Alternative HAN technologies that will deliver smart metering to in excess of 2 million GB households. They have been independently assessed to provide an economically viable solution in high rise buildings and in locations where there are hard to reach gas meters. Path 2 has been recommended because without this change there will be a material effect on consumers and competition, plus those parties offering Shared HAN solutions will be discriminated against.

Consumers: Research compiled by DECC has concluded that standard 2.4GHz HAN communications will only be effective in 70% of GB households and that low powered 868MHz HAN communications increases overall coverage to 96.5% of households. More recent work from OFCOM indicated that in excess of 2 million households would not be able to benefit from smart metering, without some alternative forms of range extending equipment.

This means that there is a risk of large numbers of GB households missing out on the smart metering implementation programme without timely and cost effective access to Alternative HAN infrastructure, such as those provided by Shared HAN technologies.

Competition: Shared HAN technologies operate through co-ordinating local communications with smart metering devices and relaying them over an alternative network communications infrastructure within a building. The technology has been designed to work with standard 2.4GHz devices, so that Energy Suppliers do not have to purchase more costly dual band devices. To work efficiently and cost effectively, this technology needs to be set up so that communications run across common channels, thus avoiding unnecessary expenditure on additional infrastructure.

In order for Shared HAN technology providers to compete effectively in the market for Alternative HAN solutions, channel selection is necessary. Without it, current technology would need to undergo a costly transition onto an 868MHz platform where industry changes will bring about channel selection. Alternatively, if technology solutions remain on the 2.4GHz platform, any future bids for buildings would be sub-optimal.

Discrimination between parties: DECC have already recognised the value of channel selection to support the efficient deployment of dual band communication hubs in high density housing and are in the process of identifying the changes to the Smart Energy Code to facilitate this at the 868MHz frequency. Not extending this to 2.4GHz in an

industry that has recognised the importance of both Point to Point and Shared HAN technologies in delivering smart metering, will result in sub optimal solutions which is both discriminatory and at odds with the First General Objective of the Smart Energy Code.

Statement of whether Proposal is intended to be Fast-Track Modification (only Panel may raise this type of modification):
No. This proposal is not intended to be Fast-Track Modification.

Is the Proposal Urgent? (delete as appropriate)	No

Statement of whether Proposal should be treated as an Urgent Proposal:
Not applicable.

4. Modification Impact Assessment

4.1 SEC Objectives

Facilitation of SEC Objectives	Tick
General SEC Objectives (C1.1)	
(a) the first General SEC Objective is to facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain;	☒
(b) the second General SEC Objective is to enable the DCC to comply at all times with the General Objectives of the DCC (as defined in the DCC Licence), and to efficiently discharge the other obligations imposed upon it by the DCC Licence;	☒
(c) the third General SEC Objective is to facilitate Energy Consumers' management of their use of electricity and gas through the provision to them of appropriate information by means of Smart Metering Systems;	☒
(d) the fourth General SEC Objective is to facilitate effective competition between persons engaged in, or in Commercial Activities connected with, the Supply of Energy;	☒
(e) the fifth General SEC Objective is to facilitate such innovation in the design and operation of Energy Networks (as defined in the DCC Licence) as will best contribute to the delivery of a secure and sustainable Supply of Energy;	☒
(f) the sixth General SEC Objective is to ensure the protection of Data and the security of Data and Systems in the operation of this Code;	☒

(g) the seventh General SEC Objective is to facilitate the efficient and transparent administration and implementation of this Code.	☐
Transition Objective (X1.2)	
X1.2 The objective to be achieved pursuant to Section X: Transition is the efficient, economical, co-ordinated, timely, and secure process of transition to the Completion of Implementation.	☒
Charging Objectives (C1.3) (in respect of the Charging Methodology)	
C1.4 The First Relevant Policy Objective: (a) applies in relation to Smart Metering Systems installed (or to be installed) at Domestic Premises; and (b) requires the Charging Methodology to ensure that Charges (other than Charges for Elective Communication Services) in respect of such Smart Metering Systems do not distinguish (whether directly or indirectly) between Energy Consumers at Domestic Premises in different parts of Great Britain.	☐

C1.5 The Second Relevant Policy Objective is that, subject to compliance with the First Relevant Policy Objective, the Charging Methodology must result in Charges that: (c) facilitate effective competition in the Supply of Energy (or its use) under the Electricity Act and the Gas Act; (d) do not restrict, distort, or prevent competition in Commercial Activities that are connected with the Supply of Energy under the Electricity Act and the Gas Act; (e) do not deter the full and timely installation by Energy Suppliers of Smart Metering Systems at Energy Consumers' premises in accordance with their obligations under the Energy Supply Licence; and (f) do not unduly discriminate in their application and are reflective of the costs incurred by the DCC, as far as is reasonably practicable in all of the circumstances of the case, having regard to the costs of implementing the Charging Methodology.	☒

C1.6 The Third Relevant Policy Objective is that, subject to the Compliance with the First and Second Relevant Policy Objectives, the Charging Methodology must result in Charges that: a) facilitate effective competition in the Supply of Energy (or its use) under the Electricity Act and the Gas Act; b) do not restrict, distort, or prevent competition in Commercial Activities that are connected with the Supply of Energy under the Electricity Act and the Gas Act; c) do not deter the full and timely installation by Energy Suppliers of Smart Metering Systems at Energy Consumers' premises in accordance with their obligations under the Energy Supply Licence; and d) (d) do not unduly discriminate in their application and are reflective of the costs incurred by the DCC, as far as is reasonably practicable in all of the circumstances of the case, having regard to the costs of implementing the Charging Methodology.	☒

Statement of how the proposed variation would better facilitate the achievement of the SEC Objectives:

Please outline your reason for raising this Modification and how implementation of the variation would better facilitate the achievement of one or more of the SEC Objectives, than if the variation were not made.

This modification has been raised to enable a niche, yet important, communication technology to effectively play its role in providing smart metering access to all GB households. Alternative HAN solutions have been acknowledged as essential to addressing the identified shortcomings of standard 2.4GHz and 868MHz communications. This change will build on an existing modification proposal from DECC to support the efficient deployment of dual band communications hubs and ensure that the roll-out programmes of energy suppliers are not compromised in any way.

With respect to how implementation of the variation would better facilitate the achievement of the SEC Objectives:

(a) the first General SEC Objective is to facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain:

Alternative HAN infrastructure like the Shared HAN solution will play a small, but important part in ensuring that all GB households get access to smart metering. Without the proposed modification, Shared HAN solutions will have to be deployed sub-optimally, or undergo a costly transition to the 868MHz frequency, rather than using standard 2.4GHz communications. Furthermore, delays to the availability of Alternative HAN technologies will result in coverage gaps, which will compromise the efficient provision and installation of smart metering systems.

(b) the second General SEC Objective is to enable the DCC to comply at all times with the General Objectives of the DCC (as defined in the DCC Licence), and to efficiently discharge the other obligations imposed upon it by the DCC Licence:

The DCC's first General Objective is to carry out its Mandatory Business in a manner that is most likely to ensure the development, operation and maintenance of an efficient, economical and co-ordinated system for the provision of Mandatory Business Services. Alternative HAN solutions, including Shared HAN technologies, will form part of the overall smart metering system and charges for these solutions will be recovered through leveraging the DCC's back office systems. Without the proposed modification, Shared HAN solutions will be developed or delivered in a sub-optimal fashion. This will inhibit the DCC's ability to carry out its Mandatory Business in an efficient and economical manner.

(c) the third General SEC Objective is to facilitate Energy Consumers' management of their use of electricity and gas through the provision to them of appropriate information by means of Smart Metering Systems

The current smart metering business case has £5 billion worth of benefits associated with energy savings through consumer access to real time consumption via an In Home Display. Without access to Alternative HAN infrastructure, such as Shared HAN technologies, energy suppliers will not be able to provide high bandwidth communications to some consumers. Similarly, without the proposed modification, Shared HAN solutions may not be cost competitive. This might mean that some consumers go without appropriate information by means of Smart Metering Systems because Energy Suppliers do not have a viable solution.

(d) the fourth General SEC Objective is to facilitate effective competition between persons engaged in, or in Commercial Activities connected with, the Supply of Energy;

DECC has acknowledged that there is no single solution that will address the diverse needs of buildings requiring Alternative HAN provision. The market is likely to be served by a number of providers, including those offering Point to Point powerline carrier solutions and Shared HAN solutions. Without the proposed modifications, Shared HAN solution providers would not be able to deliver their technology solutions in an efficient manner. Such a restriction would be anti-competitive to particular parties pursuing commercial activities connected with the Supply of Energy.

(e) the fifth General SEC Objective is to facilitate such innovation in the design and operation of Energy Networks (as defined in the DCC Licence) as will best contribute to the delivery of a secure and sustainable Supply of Energy;

Alternative HAN solutions are likely to be deployed in areas with high population density, consisting of high rise, low rise, or converted buildings. These types of areas are more likely to present strains on existing network infrastructure and opportunities for innovative operations, such as demand side management. Without the proposed modification, Shared HAN solutions may not be cost competitive for Energy Suppliers, who will have some discretion over whether they deploy such solutions or not. This could mean that consumers in areas with network strain are without smart metering and network operators do not have access to communications with individual meters to pursue innovative solutions to network design and operation.

(f) the sixth General SEC Objective is to ensure the protection of Data and the security of Data and Systems in the operation of this Code;

Alternative HAN solutions are an important component part in the overall smart metering system and they must not compromise the overall security of this system. Shared HAN solutions have been designed to manage existing ZigBee based messaging over agreed frequencies and transition these messages over broadband powerline communications, without interfering with the message structure and without requiring access to inspect cryptographically protected message segments. This ensures the protection and security of Data and Systems. Without this modification, Shared HAN solutions may not be able to operate cost effectively in this environment, helping maintain compliance with the security objective.

(g) The Transitional Objective, X1.2, is to be achieved pursuant to Section X: Transition is the efficient, economical, co-ordinated, timely, and secure process of transition to the Completion of Implementation.

The Completion of Implementation is characterised by a number of deliverables, including the ability of a party who holds an Energy Licence to be able to perform its obligations and exercise its rights under the Smart Energy Code. Alternative HAN solutions, such as shared HAN technologies provide a niche but important capability to allow energy suppliers to meet their roll-out obligations and align with the Smart Energy Code. Without this modification, Shared HAN solutions may not be able to operate cost effectively, therefore hindering the ability of Energy Suppliers to meet their obligations.

(h) The Second and Third Relevant Policy Objective is that, subject to compliance with the First Relevant Policy

Objective, the Charging Methodology must result in Charges that:

- facilitate effective competition in the Supply of Energy (or its use) under the Electricity Act and the Gas Act;
- do not restrict, distort, or prevent competition in Commercial Activities that are connected with the Supply of Energy under the Electricity Act and the Gas Act;
- do not deter the full and timely installation by Energy Suppliers of Smart Metering Systems at Energy Consumers' premises in accordance with their obligations under the Energy Supply Licence; and
- do not unduly discriminate in their application and are reflective of the costs incurred by the DCC, as far as is reasonably practicable in all of the circumstances of the case, having regard to the costs of implementing the Charging Methodology.

Alternative HAN technologies, such as Shared HAN solutions, perform a niche, yet important role in allowing Energy Suppliers to deliver their smart metering roll-out obligations. Without the proposed modification, Shared HAN solutions would not be able to deliver communications in a cost effective way. This may limit competition in the Alternative HAN market and result in Charges, passed through the DCC, that deter the full and timely installation of smart metering systems by Energy Suppliers.

4.2 Impacts

Statement of impact on Greenhouse Gas Emission:

Please state whether the proposed variation would have a material impact on Greenhouse Gas Emissions.

As highlighted above, a large part of the smart metering business case is predicated upon mass roll-out of smart metering and consumer access to timely energy consumption data through In Home Displays. Without reliable solutions to provide home area networks within all type of buildings, some energy consumers will not be able to benefit from smart metering. This will limit the energy savings available and the potential to lower resultant greenhouse gas emissions.

Timely introduction of Alternative HAN solutions will deliver energy savings earlier. Otherwise consumers within these properties will get exposure to smart metering late, or not at all, with the resultant limitations on reducing greenhouse gas emissions.

Statement of impact on which parts of the SEC would need amending (e.g. proposed legal drafting):

Please state the parts of the SEC or the SEC Subsidiary Documents that would require amendment. You may also include any proposed legal drafting you have.

We expect this modification to call upon amendments to a small number of SEC sections and subsidiary documents. These amendments are likely to be modest, given that DECC are currently facilitating a similar set of changes at 868MHz to support the deployment of dual band communication hubs, which includes a requirement for channel selection. The amendments relate to Issue TS0507 in the Issue Log.

DECC have recently advised us that they will introduce their proposed changes to facilitate 868MHz communications as part of a staged process. Staging will be driven by changes to the ZigBee specification. The first tranche of changes will relate to Communications Hub Technical Specification (CHTS) and the Smart Metering Equipment Technical Specification (SMETS). The second tranche, to follow the introduction of ZigBee 0.7 in July 2016, is likely to relate to the Great Britain Companion Specification (GBCS) and the third tranche to the DCC User Gateway Interface Specification (DUGIS) and the Message Mapping Catalogue (MMC).

DECC have already provided visibility of the proposed changes to legal text within CHTS and SMETS. Those pertinent to channel masking can be found in the following sections. The new text that has been approved for addition to support 868MHz is highlighted in italics, followed by proposed revisions to support 2.4GHz.

Communications Hub Technical Specifications

Firstly, in section 4.4.2, DECC have secured approval for the following -
Communications
Communication Links with the CHF
The CHF shall be capable of establishing and maintaining Communications Links via the HAN interface with a minimum of four ESME, one GSME, one GPF, seven Type 1 Devices (including a minimum of two PPMIDs) and three Type 2 Devices.

When operating in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands the CHF shall be capable of establishing and maintaining a maximum of four Communications Links between High Band Width Devices.

When operating in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands the CHF shall be capable of establishing and maintaining Communications Links using Channels in the CHF Channel Table(0).

The proposed modification to this would be a simple addition of the 2.4GHz frequency range in relation to the second change to support Communication Links over Channels, to read:

When operating in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands the CHF shall be capable of establishing and maintaining a maximum of four Communications Links between High Band Width Devices.

When operating in the 2400-2483.5 MHz, 876 MHz and 915 MHz – 921MHz harmonised frequency bands the CHF shall be capable of establishing and maintaining Communications Links using Channels in the CHF Channel Table(0).

Secondly DECC have secured approval for two new sections 4.6.2.5 and 4.6.2.6, in italics below, to be entitled CHF Channel Table and CHF Channel:

CHF Channel Table

A table of 1 to 49 entries listing the allowed Channels for Communication Links when operating in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

CHF Channel

The Channel for Communication Links when operating in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

The proposed modification to this would be, once again, a simple addition of the 2.4GHz frequency range, to read:

CHF Channel Table

A table of 1 to 49 entries listing the allowed Channels for Communication Links when operating in the 2400-2483.5 MHz , 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

CHF Channel

The Channel for Communication Links when operating in the 2400-2483.5 MHz , 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

Thirdly and finally in relation to CHTS, in a new section 4.6.3.12, approved by DECC, entitled CHF Communication Link Information, in italics below:

CHF Communication Link Information

The Channel in use and an indication of its quality of communication for Communication Links in the 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

The proposed modification to this would again be a simple addition of the 2.4GHz frequency range, to read:

CHF Communication Link Information

The Channel in use and an indication of its quality of communication for Communication Links in the 2400-2483.5 MHz , 863MHz – 876 MHz and 915 MHz – 921MHz harmonised frequency bands.

Prior to reviewing the proposed changes to CHTS to support channel masking at 868MHz, Siemens gave consideration to potential modifications. These have been summarised below, introducing the concept of a channel mask and a command to set this mask.

The CHTS Specification (v1.46: SMIP_E2E_CHTS.pdf) defines behaviour of the Communications Hub. It includes specification of the CHF and GPF functions of the CH. CHTS specifies conformance to GBCS v0.8.1.
The requirement within Section 4.3 of the existing document:

"On first establishing a ZigBee SEP v1.2 Smart Metering Home Area Network the CH shall be capable of fixing the frequency at which its HAN Interface operates".

should be refined to address the need for channel masking, or selection:

"On first establishing a ZigBee SEP v1.2 Smart Metering Home Area Network the CH shall be capable of fixing the frequency at which its HAN Interface operates, *according to a channel-mask. A change to the channel mask may require the HAN to be re-established."*

Furthermore, an additional command is needed to set the channel mask. This should be added to section 4.5:

"4.5.1.12 Set CHF Channel Mask: A Command to replace the CHF Channel Mask (4.6.2.6) held within the CHF.
In executing the Command the CHF shall be capable of
i. changing its communication frequency to match an allowed channel in the new channel mask
ii. Updating the CHF Channel Mask (4.6.3.12)
iii. Recording the Command and Outcome to the CHF Security Log (4.6.3.4)"

The storage of the channel mask needs to be added to Section 4.6.3:

"4.6.3.12 Channel Mask
A list of allowable ZigBee channels upon which the device is permitted to communicate. If the channel mask is not set, then channel selection is unrestricted within the range of channels defined in ZigBee SEP. If the channel mask is set, then the channel used for HAN communication must be one of those listed in the channel mask. Upon change of channel mask, if the new channel mask does not include the channel upon which the device is currently communicating, then the device must tear *down, and re-form its HAN, selecting a new channel from the list of allowed channels in the channel mask as it does so. If the channel mask is being removed, then no HAN re-formation is necessary. The CH must be capable of maintaining its device white-list across the HAN tear-down and re-formation operations required to switch channels, thereby permitting devices in an already-formed HAN to re-join the network on the new channel."*

It is likely that additional Glossary Items may also be required.

Whilst Siemens have made the above proposals in relation to changes to CHTS, SECAS should recognise that these simply amount to suggested modifications and we acknowledge that there will be other designs to fulfil the requirement for a Comms Hub to only operate on specific channels, and be capable of changing channel in response to supplier/agent messaging may be possible.

Smart Metering Equipment Technical Specifications

The SMETS2 Specifications (v1.58: SMIP_E2E_SMETS2.pdf) specify the behaviour of GSME, ESME (including Twin-Element and Polyphase devices), IHD, PPMID, HCALCS devices. All of these devices perform channel-scanning to pick up the CH device.

While some devices are permitted to communicate directly with each other in the HAN, (e.g. GSME to PPMID) the initial network formation occurs via the CH device.
As such channel selection is not a consideration, since all devices in SMETS2 will pick up the channel that the CH device selects. Therefore no change to SMETS2 is required to support channel selection for shared Alt-HAN.

This appears to be the view of DECC, who have made no changes to SMETS relating to channel selection to support 868MHz communications.

Over and above SMETS and CHTS, DECC advised us that they have yet to propose changes to GBCS, DUGIS and the MMC. As a result, as part of our analysis for this proposal, we have outlined the changes that we believe are necessary, plus changes to the main SEC document.

Smart Energy Code

The sections within the main SEC document that will need amendments are:

H5 Smart Metering Inventory and Enrolment Services
The Smart Metering Inventory and Enrolment Services section and accompanying Inventory, Enrolment and Withdrawal Procedures Document will need to introduce sub-sections relating to:

-DCC obligations to maintain channel data within the Smart Metering Inventory
-Party obligations to review this channel data when installing devices in buildings with Shared HAN infrastructure
-Party obligations to set and maintain the use of this channel when adding devices to the CHF and joining devices

Appendix I CH Installation and Maintenance Support Materials
The changes within the Smart Metering Inventory and Enrolment Services section will also need to be reflected in Appendix I CH Installation and Maintenance Support Materials.

In addition to the main body of SEC and CHTS, the subsidiary documents that will need amendments are:

GB Companion Specification:

The GBCS specification (v0.8.1: GBCS_v0.8.1.docx) details low level interactions between the various devices in the HAN. It is, in general, concerned with the messages between devices, and the security of those messages.
When the CH changes its channel, devices will lose connectivity. This could be left for the devices to re-establish network themselves, in which case no changes are needed.

If the CH is required to tell the devices to switch channel – it is expected that this could be done via a specific ZSE command (Co-ordinator Realignment), however this would need to be done before the new channel is selected, but after the new channel mask has been sent to the CH.

If such an approach were included, it would be necessary to modify GBCS to include it. However since the SMETS2 devices will re-scan networks regardless, it is not thought it is necessary to include this change as the HAN should re-form on the new channel in the standard ZigBee manner: either secured or un-secured rejoin, which may or may not involve orphan notifications and co-ordinator realignment messages. Opening of a joining window should not be required either.

There will, however need to be the inclusion of the “Set Channel Mask” command and associated data elements and

codes within the following embedded documents within GBCS.

- GBCS v0.8.1 Event and Alert Codes.xlsx
- GBCS v0.8.1 DLMS COSEM Message Templates.htm
- GBCS_v0.8.1_SMETS2_UseCases.html
- GBCS v0.8.1 SMETS 2 requirements mapping.xlsx

The detail of the changes in each of these embedded documents will also require definition, as the new use case and information associated with its implementation is included. This detail is beyond the scope of this document, as it is low level design of the GBCS supporting the high-level specification in the CHTS, above.

DCC User Gateway Interface Specification

The DCC User Gateway Interface Specification (dcc_user_gateway_interface_specification.pdf) has been inspected. DUIS communication does not currently include a service request to set the channel mask. This will be required as a new service request if Suppliers wish to set the channel mask interactively for the lifetime of the CH in the field. However, this is not necessary for install purposes, if the channel mask only needs to be set when the device is first commissioned. In that case, SR 8.14 could be extended to include the channel mask as an additional data item.

Changes to DUGIS will need to be cross referenced in the Message Mapping Catalogue (MMC).

In addition to the above documents, we have reviewed the ZigBee Smart Energy Profile. Based on the analysis below, we do not believe that this document is in need of any changes.

ZSE1.2

ZSE1.2 (v1.0: docs-07-5356-19-0zse-zigbee-smart-energy-profile-specification.pdf) has been inspected.
No changes are needed to ZSE1.2. The channel mask is a start-up parameter in ZSE1.2, under section 5.3.1. Since the CH will be re-forming the network on a new channel so long as it is able to accept this start-up parameter, no further changes need to occur.

Section 5.8.3 of ZSE1.2 defines the approach to Frequency Agility in ZSE1.2. There is provision within ZSE1.2 for a network co-ordinator (CH) to send a “Go to Channel X” command. If other devices in the network do not support this, then there is also provision for NWK re-join or orphan join features to be used. The necessary features already exist within ZSE1.2 and ZigBee Pro.

Statement of impact on likely changes to other Energy Codes:

List any other Codes impacted e.g. BSC, MRA and/or the product.

No known impacts.

Statement of impact on likely Party Categories:

Large Supplier Parties	☒	Small Supplier Parties	☒
Electricity Network Parties	☐	Gas Network Parties	☐
Other SEC Parties	☒		

Please state the reasons behind your choice.

Enabling channel selection at 2.4 GHz will provide greater flexibility at the installation and commissioning process for smart metering systems. This will therefore impact upon Large Supplier Parties, Small Supplier Parties and Other SEC Parties (specifically Meter Operators and Meter Asset Managers) involved in the installation and commissioning process.

Statement of impact on Central Systems:			
DCC Systems	☒	User Systems	☒
Smart Metering Systems and/or Communications Hubs	☒	Other (i.e. on Smart Metering Key Infrastructure, or security)	☐

Please state the reasons behind your choice.

DCC Systems will need to be changed slightly to facilitate a new service request to support channel selection. That capability will need to be established within User Systems and enables through Communications Hubs.

5. Proposed Timetable

Proposed Timetable for Modification Proposal:

Please state your recommendation for the timetable of implementation for the proposed variation, including the proposed implementation date.

This proposal, if approved, would provide Energy Suppliers and their Agents with a fuller suite of technology solutions to introduce smart metering into all GB households. It would be beneficial to have the change in place at a similar time to other technology solutions that will deliver improvements in HAN forming capabilities, most notably dual band communication hubs. We understand that the designation of the dual band communications hubs provisions are anticipated in February 2018 and recognise the logic in aligning with that.

6. Additional Information

Additional information:
None.

APPENDIX 1: Glossary of Terms

The table below illustrates useful definitions of the terms used in this form. If you require any further information please contact the SECAS Helpdesk.

Term	Definition
DCC Systems	Means the Systems used by the DCC and/or the DCC Service Providers in relation to the Services and/or this Code (Section A1, SEC Stage 3.0). The Proposer may wish to consider anticipated impacts on the DCC Licensee's enterprise systems (e.g. billing) or the Data Service Provider or Communications Service Providers.
Fast-Track Modifications	Means Modification Proposals (Path 4 Modifications) to correct typographical or other minor errors or inconsistencies to the Code (Section D2.8, SEC Stage 3.0).
General SEC Objectives	Has the meaning given to that expression in Section C1 (SEC Objectives) (Section C1, SEC Stage 3.0). The SEC Objectives are those objectives that the SEC has been designed to achieve.
Greenhouse Gas Emission	Means emissions of Greenhouse Gases, as defined in section 92 of the Climate Change Act 2008 (Section A1, SEC Stage 3.0).
Other Systems	Other systems identified in the section Statement of Impact on Central Systems. The Proposer may wish to consider Prepayment vendors, Electricity Central Online Enquire Service (ECOES), Single Centralised Online Gas Enquiry Service (SCOGES), BSC Settlement Systems, etc.
Path Type	Means the Modification Path to be followed in respect of a Modification Proposal. The type of Path will depend upon the nature of the variation proposed in the Modification Proposal (D2.1, SEC Stage 3.0). The four Modification Paths under the SEC are: • ***Path 1 Modifications: Authority-led*** (Section D2.4/D2.5, SEC Stage 3.0) • ***Path 2 Modifications: Authority Determination*** (Section D2.6, SEC Stage 3.0) • ***Path 3 Modifications: Self-Governance*** (Section D2.7, SEC Stage 3.0) • ***Path 4 Modifications: Fast-Track Modifications*** (Section D2.8, SEC Stage 3.0)

Party Category	Means one of the following categories: (a) the Large Supplier Parties collectively; (b) the Small Supplier Parties collectively; (c) the Electricity Network Parties collectively; (d) the Gas Network Parties collectively; or (e) the Other Sec Parties collectively. (Section A1, SEC Stage 3.0).
Smart Metering Systems	Means a system installed at premises for the purposes of the Supply of Energy to the premises that, on the date it is installed, as a minimum; (a) consists of the apparatus identified in; (b) has the functional capability specified by; and (c) compiles with the other requirements of, the Smart Metering Equipment Technical Specification that is applicable at the date (Section A1, SEC Stage 3.0). In summary, this includes: • Gas Smart Metering Equipment; • Electricity Smart Metering Equipment; • In Home Display; • Prepayment Interface Device; and • HAN Connected Auxiliary Load Control Switch.
Urgent Proposal	Means a Modification Proposal deemed an Urgent Proposal where the Authority directs the Panel to treat the Modification Proposal as an urgent Proposal (whether following a referral by the Panel pursuant to Section D4.5, or at the Authority's own initiation) (Section D4.5/D4.6, SEC Stage 3.0).
User Systems	Means, in respect of each User (DCC User), the Systems of that User (including, where relevant, those of its Supplier Nominated Agent) used in relation to the Services and/or Smart Metering Systems (Section A1, SEC Stage 3.0). The Proposer may wish to consider Suppliers; Network Operators; Registration Data Providers; Other DCC Users (e.g. Authorised Third Parties / Switching Sites); Supplier Nominated Agents.