

Stage 02: Initial Modification Proposal Report

What stage is this document in the process?

01	Modification Proposal
02	Initial Modification Report
03	Draft Modification Report
04	Final Modification Report

SECMP0007:

Firmware updates to mandated HAN devices

The Proposer seeks to include the capability to update firmware Over-The-Air (OTA) for mandated HAN devices (IHD / PPMID / HCALCS) via the DCC's infrastructure.



The recommendation is that this Modification Proposal should be:

- progressed as a Path 2: Authority Determined Modification Proposal; and
- progressed through the Refinement Process.



High Impact:

This change will impact SMETS2, CHTS and GBCS as well as DCC related documents.

It will impact Energy Suppliers, DCC, Device Manufacturers, and Registered Supplier Agents.

Contents

1.	Summary of Modification Proposal	3
2.	Why Change?	5
3.	Proposed Solution	6
4.	Impacts & Costs	10
5.	Implementation	13
6.	Progression	13
7.	Panel Initial Assessment	18
8.	Further Information	19
9.	Glossary	19



Any questions?

Contact:
Seb Rattansen

secas@gemserv.com

020 7090 7755

About this document

This document is an Initial Modification Report. It has been issued to the SEC Panel to enable the Panel to carry out its initial consideration of the Modification Proposal.

1. Summary of Modification Proposal

This section provides an overview of SECMP0007. For further details on the Modification Proposal please refer to subsequent sections.

Defined Terms and acronyms used in this document are listed for reference in the Glossary (Section 8) of this document.

1.1 Summary of Modification

The Proposer seeks to include the capability to update firmware Over-The-Air (OTA) for mandated HAN devices¹ via the DCC's infrastructure.

1.2 Proposed Solution

The solution proposed is to amend the SMIP Technical Specifications² to include the capability to update firmware using OTA for mandated HAN devices (IHD / PPMID / HCALCS). These requirements would need to be underpinned by the relevant SEC obligations and SEC Subsidiary Documents.

1.3 Impacts

The Proposer indicates that the Modification Proposal will have a high impact. It will likely impact DCC systems, User Systems, and Smart Metering Systems.

Impacted SEC Subsidiary Documents are likely to include:

- SMETS2 (Smart Metering Equipment Technical Specification 2);
- CHTS (Communications Hub Technical Specification);
- GBCS (Great Britain Companion Specification); and
- DCC related documents.

1.4 Targeted Implementation Date

The proposal targets implementation in a release as soon as possible after DCC Live, and proposes the modification be considered for Release 2.0, which is currently scheduled for June 2017, or as soon as possible thereafter.

1.5 Release Management and Testing Requirements

This modification falls under the Panel's Release Management Policy. The testing requirements will be further informed in the Refinement Process and form part of the

¹ Mandated HAN devices are IHD, PPMID, and HCALCS as laid out in the SMIP Technical Specifications.

² Please see the glossary for a description of these terms.

Working Group considerations. Implications for Device testing or Assurance Certificates are the responsibility of the relevant SEC Party.

1.6 Proposed Progression

This modification must go through the Refinement Process pursuant to SEC D3.9(c) as it affects the DCC Systems, User Systems and/or Smart Metering Systems.

Section 6 of this document contains a detailed timetable and the Working Group constitution and objectives.

2. Why Change?

2.1 What is the issue?

The SMIP Technical Specifications (namely SMETS2, CHTS, GBCS and CPA Security Characteristics) currently capture OTA firmware updates via the DCC to the CH, ESME and GSME only. Requirements for OTA firmware updates to mandated HAN devices³ are not captured.

Suppliers have advocated for a number of years for the inclusion of mandated HAN devices based on the original agreed industry specifications that were captured in the Industry's Draft Technical Specification (IDTS)⁴. Suppliers agreed that not having the ability to carry out OTA firmware updates to these mandated HAN devices will result in:

- Significant cost impacts for Suppliers associated with:
 - operating multiple OTA and non OTA update processes;
 - stranded assets; and/or
 - site visits to locally update firmware, or replace / remove devices;
- The need for Suppliers to manage multiple processes and systems for firmware updates on all smart metering devices (OTA and non OTA) at consumer premises. There will be additional costs associated with this;
- A risk that devices which are not currently OTA upgradable may lose their ability to communicate on the HAN if there is a ZigBee stack upgrade that needs to be applied to address, for instance, a security related issue. This is especially relevant given that:
 - IHDs and PPMIDs are key to facilitating consumers' access to information;
 - PPMIDs are key to facilitating prepayment functionality; and
 - HCALCS are load affecting devices; and
- Limiting the opportunity to add value or innovate in the future.

The Proposer considers that the impacts captured in the bullets above will result in a negative consumer experience. The impacts will also add a reputational risk to Suppliers and the SMIP as a whole – therefore impacting the overall benefits argument for smart metering.



What's the issue?

The SMIP Technical Specifications do not currently capture OTA firmware updates via DCC for mandated HAN devices. The Proposer considers this has a number of negative impacts.

³ Mandated HAN devices are IHD, PPMID and HCALCS as laid out in the SMIP Technical Specifications.

⁴ The IDTS is available [here](#).

3. Proposed Solution

The Proposer seeks to amend the SMIP Technical Specifications to include the capability to update firmware using OTA for mandated HAN devices. These requirements would need to be underpinned by the relevant SEC obligations and SEC Subsidiary Documents.

In summary, the assumed high-level process for an OTA firmware update on mandated HAN devices would involve the following steps:

- Once a firmware image has been developed and gone through the appropriate assurance, the Supplier sends a “Distribute Firmware” command containing the firmware image to the GUID of the target IHD or PPMID or HCALCS. This would be a Non-Critical command (a “one-to-many” broadcast).
- Upon successful verification of the firmware image by the IHD or PPMID or HCALCS, the Supplier receives an alert confirming successful verification.
- The Supplier then sends an “Activate Firmware” command to the GUID of the target IHD or PPMID or HCALCS. This would be a Critical command (a “one-to-one” broadcast).
- The IHD, PPMID, or HCALCS performs the firmware activation and sends a response to the Supplier confirming it was successful completed.

The above summary process aligns with the current SMIP Technical Specifications for the Supplier to distribute and activate firmware on the ESME and GSME via an OTA update.

The Proposer seeks to update the SMIP Technical Specifications for the three mandated HAN devices at the same time. However, if phasing is considered more optimal then the order of preference could be as outlined in these two options:

- IHD and PPMID in phase 1, followed by HCALCS in phase 2; or
- Current Type 1 devices (PPMID and HCALCS) in phase 1 and then followed by Type 2 devices (IHD) in phase 2.

It is expected that as part of the Modification Process and the impact assessment of the modification, the Technical Sub-Committee will have a view on the optimal delivery approach for this proposal. That delivery approach could be all three mandated HAN devices at the same time or via a phased approach as captured in options (a) or (b) above.

The Proposer notes that assurance of the overall process will need to be considered. This includes activities such as interface testing with the DCC as well as device level certification and testing. The Firmware Management Design Note will need updating to reflect changes to the process as specified above.

3.1 Legal Text

The necessary amendments to the SEC and relevant Subsidiary Documents will be prepared during the Refinement Process.

3.2 Applicable SEC Objectives

The below table presents the applicable SEC Objectives identified and the Proposers view on how the modification would better facilitate the achievement of these objectives.



What's the solution?

The solution proposed is to amend the SMIP Technical Specifications to include the capability to update firmware OTA for mandated HAN devices.

How the Modification Proposal would better facilitate achievement of the SEC Objectives

SEC Objective	Proposer views
(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.	The proposed solution will provide for a fit for purpose, efficient and effective process for updating firmware on the IHD, PPMID and HCALCS. It would additionally allow Energy Suppliers to avoid unnecessary costs relating to replacement of devices and site visits thus helping to ensuring the sustainability of devices for the longer term.
(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 modification would allow consumers to better manage their energy usage by having sustainable most-up-to-date devices that provides them with energy related information.
(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.	The proposed solution would allow Energy Suppliers to use a fit for purpose, efficient and effective process for updating firmware on the IHD, PPMID and HCALCS – this process would be consistent between all Energy Suppliers as well as aligned to the process for updating firmware on the ESME and GSME.
(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.	The proposed solution would cover any potential security vulnerabilities on the IHD, PPMID or HCALCS that may need be addressed using a fit for purpose, efficient and effective process for updating firmware on these devices.

4. Impacts & Costs

The following section provides an initial assessment of the likely impacts from SECMP0007. If the Modification Proposal is subjected to the Refinement Process, additional impacts may be identified by the Working Group.

4.1 Impacts

The following is provided as an indication of likely impacts as known at this time. The Refinement Process will further inform the impacts of SECMP0007.

Material Impact on Greenhouse Gas Emission

The Proposer does not believe there will be any material impact on Greenhouse Gas Emissions.

Impact on Parts of Smart Energy Code or SEC Subsidiary Documents

SEC Sections, Schedules of Appendices (Subsidiary Documents) likely impacted	Potential Impact
SMETS2	Significant impact. Various sections will need to be added or changed, as outlined in Section 3.
CHTS	As above.
GBCS	As above.

Impact on other Codes and documents

The Proposer does not believe there will be any impacts on other Codes.

Impact on Smart Energy Code Party Categories

Potential Impact	Party Category
Suppliers are responsible for the procurement, installation and maintenance of SMETS2 devices in customers' premises. They have an obligation to ensure devices are operating as they should be. Therefore a fit for purpose firmware management process covering all mandated devices would support Suppliers in delivering their obligation consistently.	Large Suppliers, Small Suppliers



Are there any Impacts?

The Modification Proposal is likely to impact DCC, Large and Small Suppliers, and several Smart Metering devices (CHs, IHDs, PPMIDs, and HCALCS)

Impact on DCC Systems	
Area of DCC impacted	Potential Impact
DCC	The Modification Proposal would impact a range of DCC products. These include: DUIS, MMC, CH design documents, and the Smart Metering Inventory.
Data Service Provider (DSP)	To be informed through the Refinement Process.
Communications Service Providers (CSP)	To be informed through the Refinement Process.
Trusted Provider	To be informed through the Refinement Process.

Impact on other Systems	
Area of impact	Potential impact
User Systems	The Modification Proposal would impact User Systems. The nature of the impact will be informed through the Refinement Process.
Smart Metering Systems	The Modification Proposal would impact the following devices: Communication Hubs, IHD, PPMID, and HCALCS. The nature of the impact will be informed through the Refinement Process.
Other (e.g. Security and PKI)	To be informed through the Refinement Process.

4.2 Costs

The costs of implementing SECMP0007 will be identified as it progresses through the Refinement Process. These costs will capture indicative DCC implementation costs as provided in their impact assessment responses and any SEC Party costs (where provided during the relevant consultations).

5. Implementation

The Proposer has requested that this Modification Proposal be progressed for implementation in the first release after DCC-live. This is currently expected to be June 2017.

During Refinement, it may become clearer whether June 2017 is achievable under the implementation timetable. In this event, the Working Group should identify this as part of their deliverables and this has been incorporated into the supplementary considerations in section 6.5 below.

5.1 Modification Proposal Testing Requirements

The Panel Release Management Policy notes that, as part of the Panel's considerations of a Modification Proposal and the associated implementation timetable and date, the Panel will consider what testing is required and who will be eligible to participate. SEC Section H14 requires the DCC to make provision for Modification Proposal implementation testing as part of its Testing Services.

This Modification Proposal is anticipated to require testing consistent with the SEC (v4.8) Section T arrangements for:

- i. DCC testing (Systems Integration Testing (SIT)); and
- ii. Interface Testing (IT) with a representative number of ENO Users and DCC to demonstrate the capability of the DCC solution to interoperate with ENO User Systems.

In both cases, the approach for SIT and IT will be informed during the Refinement Process.

It is noted that the final testing scope and arrangements will be integrated under the Panel Release Management Policy approach for "R2".



When will the Modification Proposal be implemented?

The Proposer has requested that this Modification Proposal be implemented in the first release after DCC-live. This is currently expected to be June 2017.

6. Progression

6.1 Modification Path

Based on the initial review of the Modification Proposal and subsequent discussion with the Proposer, SECAS recommends that the appropriate Modification Path is: Path 2 - Authority Determined.

6.2 Progression route

The Refinement Process is required for this Modification Proposal as the Proposer has identified that it affects DCC Systems, User Systems, and Smart Metering Systems, which are the SEC criteria for following the Refinement Process (see SEC Section D3.9(c)).

The Refinement Process (SEC Section D6) requires that a Working Group is established by the Panel to undertake the Refinement Process. In outline, the objectives of the Working Group are to:

- Consider the effects of the Modification Proposal on participants, Emissions and Other Energy Codes;
- Evaluate, develop and refine the content of the Modification Proposal, including where the Working Group considers an Alternative Proposal may be relevant, prepare and submit this into the Refinement Process with the Proposers Modification Proposal;
- Evaluate, and amend if applicable, the proposed implementation timetable of the Modification Proposal including with regard to consistency with the Panel Release Management Policy;
- Obtain and take into account the views of other relevant Sub-Committees (TSC, SSC, SMKI PMA);
- Obtain assessments from the DCC as to the impact and costs of the Modification Proposal;
- Consider the SEC Objectives that may be better achieved if the Modification Proposal was implemented;
- Conduct a Consultation(s);
- Consider any representations made to the Working Group by Parties; and
- Deliver a Modification Report to the Panel in respect of the Modification Proposal.

6.3 Working Group membership requirements

SEC Section D6.3 states that a Working Group must be at least five members with relevant expert knowledge. Therefore SECAS propose that the Working Group should be made up of:

- The Proposer or a person nominated by the Proposer as a duly authorised representative of the Proposer;
- No less than five other Working Group members with relevant experience and expertise in relation to the subject matter of the Modification Proposal (noting that TSC expertise need not be duplicated as this may be achieved through co-ordination between the Working Group and the TSC);
- Any interested members from the TSC (or other Sub-Committees), notwithstanding the duplication issue raised above;
- Manufacturer experts (provided by, for example, BEAMA);

SECP_30_1103_11

SECMP0007
Initial Modification Report

04 March 2016

Version 1.0

Page 11 of 19

© SECCo 2016

- Any other Working Group members who are broadly representative of the Users likely to be affected by the Modification Proposal, so that the Refinement Process is well informed;
- A secretary (who shall be non-voting) resourced by SECAS to see to the administrative needs of the Working Group; and
- A Chair.

The Working Group can also be attended by:

- DCC representatives; and
- DECC or Ofgem representatives.

6.4 Convening the Working Group

It is noted that SEC Section D6.3 makes provision for the Panel, with the cooperation of the Parties to establish a standing list of persons with potentially relevant experience who may be willing to serve on Working Groups. As Modification Paths have only recently been enabled such a standing list is not available to the Panel.

Therefore it is recommended that an open invitation is issued at this time, with a view to using this exercise as a means of identifying the constitution of any future standing membership that can be called upon as a Modifications Working Group.

Modification Working Group members are required to meet the SEC requirements to confirm in writing to SECCo that they agree to serve on that Working Group and to do so in accordance with this Code.

Working Group Chair

SEC Section D6.4 enables the Panel to request that SECAS provides the chair for the Working Group. While the Modification Process beds down, it is proposed that, to facilitate convening the Working Group in the first instance, SECAS provides the Chair. The Working Group, once constituted, may then proceed to appoint a Chair from within its membership, if that is the majority view of the members. This option would only be available at the first meeting to preserve continuity.

6.5 Working Group Terms of Reference

To meet the requirements set out for Working Group's in SEC Section D6.8-D6.14, standard Terms of Reference are provided in Appendix B. In addition, the following questions have been identified for the Working Group to consider to fully assess the Modification Proposal.

Working Group Terms of Reference – supplementary questions to consider

What is the materiality of the issue?

Is the solution proposed in this SECMP0007 more efficient than the current command set?

Are there other deficiencies in the current solution that are addressed by SECMP0007?

Which of the two methodologies set out in SECMP0007 is the preferred approach?

Working Group Terms of Reference – supplementary questions to consider

What are the detailed changes to the SEC and/or SEC Subsidiary Documents to support this SECMP0007 (and its Alternative(s))?

What are the systems impacts for DCC/Users/Smart Meters?

What are the costs and lead times to introduce the solution in this SECMP0007 or its Alternative(s)?

Is the implementation timetable appropriate?

Are Consumers positively or negatively impacted by the Proposed (or any Alternative) solutions and to what extent?

What Modification Implementation Testing is required to implement the Proposed Modification, or any Alternative(s)?

What are the implementation steps and activities required to implement the Proposed (or an Alternative) Solution(s)?

Have the views of the relevant Panel Sub-Committee been taken into account?

Has the Refinement Process identified any potential reason that this Modification (or its Alternatives) may require EC Notification (noting that the Authority will determine if any such Notification is pursued)?

The above is not intended as an exhaustive list and it is expected that the Working Group will identify and address any other considerations that arise during the Refinement Process.

6.6 Timetable

As the Modifications Process has only recently been activated, the timetable set out below was put together in discussion with the Proposer and SECAS as a good faith estimate. A number of assumptions underpin this timetable:

- The Proposer has requested that the Modification Proposal is implemented in June 2017;
- The proposed timetable below has been put together based on a June 2017 implementation date, noting that the implementation date may need to be flexible to accommodate the necessary implementation and testing lead times, if the Modification Proposal is approved;
- The proposed timetable includes some assumed timescales for the turnaround of DCC's detailed Impact Assessments and Authority determination, based on the indicative timescales provided by these entities;
- If the changes associated with this Modification Proposal require EC Notification, the proposed timetable does not currently factor in the three months required to

SECP_30_1103_11

SECMP0007
Initial Modification Report

04 March 2016

Version 1.0

Page 13 of 19

© SECCo 2016

complete this, and which would occur after a Change Board vote or any Authority (Secretary of State) approval process;

- The proposed timetable has been up based on this Modification Proposal progressing without cancellation or suspension under [DECC's guidance](#) criteria for such circumstances;
- The timetable assumes that any Panel Sub-Committee inputs can be fed into the Refinement Process at the appropriate time, and this may be subject to alteration.

Modification Timetable

Activity	Date
Modification Proposal raised	1 March 2016
IMR considered by Panel	11 March 2016
Working Group meetings Indicative activities: • Initial considerations • Legal drafting • Sub-Committee feedback • Alternative(s) identified • Detailed evaluation	March - May
Working Group Consultation	May 2016
Final Working Group meeting Indicative Activities: • Consultation response summary • WG deliverables met • Assessment for Modification Report	July 2016
Panel reviews Modification Report	September 2016
Modification Report phase consultation	September 2016
Change Board vote	19 October 2016
Modification Decision by the Authority	November 2016
Implementation	June 2017

6.7 Grouping this Modification Proposal with others

There are a number of Modification Proposals that are currently entering the SEC process that have implications for a similar set of Parties and SEC Subsidiary Documents. It may be possible to bring efficiencies into their Refinement under one Working Group. For example, whilst the underlying content may not be directly related, each solution entails

opening the Technical Specifications. There may be merit in grouping these under the Terms of Reference for a single Working Group so that the implications of changes to the Technical Specifications are consistently understood for the future.

SECAS is of the view that this is entirely consistent with the aim in the SEC of establishing standing members to serve on Working Groups and will offer both value for money for the Panel budget and a reduction in commitment by Working Group members who might otherwise have to attend several meetings to progress each modification discretely.

SECAS considers that there may be potential to group this SECMP0007 with others for consideration by one Working Group and **recommends** that the merits of this are explored further when issuing the invitations for the Working Group.

7. Panel Initial Assessment

The Panel is requested to **NOTE** the contents of this Initial Modification Report for SECMP0007 and, pursuant to SEC Section D3.6, **AGREE** the following as set out in this Initial Modification Report:

- whether to accept the Modification Proposal;
- it is a Path 2 Modification (taking into account the view expressed by the Proposer);
- that it is necessary for the Modification Proposal to go through the Refinement Process as set out in Section 6.2 ;
- to establish a Working Group with the membership and Working Group Chair as set out in Section 6.3;
- whether SECMP0007 should be considered together with any other current Modification Proposal(s);
- the supplementary considerations for SECMP0007 to supplement the standard Working Group terms of Reference set out in Section 6.5;
- the modification progression timetable set out in Figure 1 of Section 6.6; and
- the potential to group SECMP0007 with other modifications to gain efficiencies in the Refinement Process across a number of potential changes to the Technical Specifications.

8. Further Information

More Information is available in:

- Attachment **A**: Modification Proposal
- Attachment **B**: Working Group Terms of Reference

For further information, please see the [Modification Register](#) page of the SEC website.

Or contact the Code Administrator at secas@gemserv.com.

9. Glossary

The terms listed in the below table are defined in SEC Section A.

Glossary	
Term	Acronym
Centralised Firmware Library	CFL
Communications Hub Technical Specification	CHTS
Certified Products List	CPL
Communication Hub Installation & Maintenance Support Materials	CHIMSM
Commercial Product Assurance	CPA
Communications Service Providers	CSP
Data Communications Company	DCC
Data Service Provider	DSP
DCC Key Infrastructure	DCCKI
DCC User Interface Specification	DUIS
Electricity Smart Metering Equipment	ESME
European Commission	EC
Great Britain Companion Specification	GBCS
Gas Smart Metering Equipment	GSME
Globally Unique Identifier	GUID
HAN Connected Auxiliary Load Control Switch.	HCALCS
Home Area Network	HAN
Impact Assessment	IA
Industry's Draft Technical Specification	IDTS
Initial Modification Report	IMR
Over The Air	OTA
Public- Key Infrastructure	PKI

SECP_30_1103_11

SECMP0007

Initial Modification Report

04 March 2016

Version 1.0

Page 18 of 19

© SECCo 2016

Glossary	
Prepayment Meter Interface Device	PPMID
SEC Modification Proposal	SECMP
Secretary of State	SoS
Security Subcommittee	SSC
Smart Energy Code	SEC
Smart Energy Code Administrator and Secretariat	SECAS
Smart Energy Code Company	SECCo
Smart Meter Wide Area Network	SM WAN
Smart metering equipment technical specifications	SMETS
Smart Metering Implementation Programme	SMIP
Smart Metering Key Infrastructure	SMKI
Sub Committee	SC
Subsidiary Document	SD
Technical Sub-Committee	TSC