

What stage is this document in the process?

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

Stage 01: Modification Proposal

SECMPO0009: Centralised Firmware Library

Establishment of a repository of firmware images, with access provided to all Parties responsible for the management of SMETS1 and/or SMETS2 meters.

The Proposer recommends that this Modification should be *(delete as appropriate)*:



- progressed as a Path 2: Authority Determined Modification

This Modification Proposal should:

- be assessed by a Work Group



Medium Impact:
Supplier Parties and Device Manufacturers

MODIFICATION PROPOSAL FORM V1.0

1. Proposer's Contact Details

Details of Proposer

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Representative as Point of Contact

Details of Representative's Alternate

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2. Modification Proposal Details

Mod Submission Date	1 st March 2016
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Title of Mod Proposal:	Centralised Firmware Library
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Description in Detail of the Proposed Modification:	This is a proposal for the establishment of a Centralised Firmware Library (CFL). The library would be a repository of “non-commercially released” firmware images for all Device Models which are required to be included on the Certified Products List (CPL). The term “non-commercially released” firmware images relates to those firmware images that are released to fix bugs and defects associated with a Device Model, rather than firmware images that are developed on a commercial basis between an Energy Supplier and Device Manufacturer in order to deliver enhanced functionality or features that go beyond the minimum SMETS1 and/or SMETS2 specifications. It is therefore recognised that certain firmware versions included on the CPL may not be available via the CFL based on the commercial nature of their existence – consideration may need to be given within the CFL to make this distinction clear to all users. This distinction should also help support the quality of Release Notes associated with any new firmware images.
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In accordance with SEC Section F2.1 and clause 2.9 of the CPL Requirements Document (a SEC Subsidiary Document, the specific Appendix is [TBC] pending formal designation), these Device Models are all other than Type 2 Devices, i.e.:

- Electricity Smart Metering Equipment (ESME)
- Gas Smart Metering Equipment (GSME)
- Pre-Payment Interface Devices
- HAN Connected Auxiliary Load Control Switches

Firmware images for both SMETS1 and SMETS2 compliant ESME/GSME should be included, covering “non-commercially released” firmware images.

It is envisaged that new SEC drafting would be required for the governance requirements and security requirements of the CFL.

All Supplier Parties who have the potential to become a Responsible Supplier should be granted free access to the repository.

Establishing this CFL would alleviate a number of issues:

- Suppliers who do not have an existing commercial relationship with a device Manufacturer would now be able to review Firmware Release Notes and acquire available Firmware Images to distribute to devices with relative ease. This is particularly relevant when considering how many devices will be affected by this issue through customer/supplier churn from Change of Supplier events.
- SEC Parties, acting through Energy UK, have voiced concern that there is currently no plan in place to facilitate the establishment of a CFL

This proposal does not currently envisage the CFL being incorporated into current design for DCC Live [for DCC Release 1.2 / 1.3] and build specifications and would be a new standalone service. For the avoidance of doubt, this proposal is entirely distinct from the CPL and there is no proposed crossover or linkages between the two, with the exception of a requirement on Responsible Suppliers to populate the CFL when a new “non-commercially released” firmware version is placed onto the CPL. Associated drafting will need to be considered for this, placing requirements on Responsible Suppliers to update the CFL in a timely fashion.

In addition to being a repository for firmware images, the library should offer a web interface to facilitate access to firmware images. This web interface would also provide detailed firmware version release information on available firmware images (firmware image release notes). However, these are the minimum requirements for the solution. Further details (including the format and level of information required) could be added or determined as part of the development of the overall solution within this Modification Proposal.

DECC’s transitional security group, TSEG, have identified an issue in that there are currently no arrangements in place for the sharing of SMETS1 or SMETS2 security vulnerabilities. The CFL should not issue pro-active alerts when new versions of firmware are released as the CFL is not intended to act as a vulnerability management tool. The CPL remains the source of information on notification of new firmware releases, which should then prompt parties to access the CFL to obtain more detailed information on what the release contains. Consideration may need to be given on whether there is a requirement to assign a high-level category to new firmware versions so that Parties are able to prioritise their considerations on whether or not to distribute new firmware versions to Device Models within their current Device portfolio.

Security of any CFL would require consideration. Hashes of firmware are analysed as part of the ‘distribute firmware’ (check) DUIS Service Request (SR 11.1 Update Firmware), therefore the

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process for distribution and activation of Firmware already has some protections built in. However, measures to protect the integrity of hosted images should be considered.

DECC have indicated that they have no fundamental objections to the introduction of a CFL. However, DECC have indicated that security requirements should be considered fully as part of the overall design. It is proposed that following initial refinement, and once desired functionality and information assets are identified, and once accompanying Section G requirements are drafted, the solution should be taken to the SEC Panel's Security Sub-Committee (SSC) for consideration. Any security requirements identified via this route should be included as part of the new SEC drafting arising from this Modification Proposal.

3. Path Type and Urgency Recommendation

Proposer's recommendation on Path Type (delete as appropriate)::	Path 2
Statement for recommended Path Type::	
This modification is likely to have a material effect on the security of Smart Metering systems and is likely to have a material effect on competition/commercial activities connected with the supply of energy.	
Statement of whether Proposal is intended to be Fast-Track Modification (only raise this type of Modification):	
N/A – Not proposing that this proposal is treated as a fast track mod.	
Is the Proposal Urgent? (delete as appropriate):	No
Statement of whether Proposal should be treated as an Urgent Proposal:	
N/A – Not proposing that this proposal is treated as an Urgent Proposal.	

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; (networks based)	☒
(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.



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

This Modification Proposal will better facilitate:

4(a),(d), (f) – All Suppliers would have access to all “non-commercially released” firmware versions, resulting in increased equality between market participants, alleviating a potential barrier to entry for new Suppliers and improving potential response times to critical firmware updates (i.e. those addressing a potential security vulnerability).

4(a),(c), (e) (f) - Efficient operation of devices is achieved through wider access to firmware which may alleviate bugs or in other ways improve functionality.

4(f), (e), (c) - Protection of data and security would be made easier by readily available firmware images as responsible suppliers' ability to respond to identified vulnerabilities is enhanced. This also helps achieve a secure supply of energy. Notification of recommended updates also helps achieve security of the network.

4.2 Impacts

Statement of impact on Greenhouse Gas Emission:

There are no impacts on Greenhouse Gas Emissions expected

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

- SEC Section F would need expanding, to include an entirely new section for the CFL. The drafting would likely be similar in structure of the CPL requirements within the SEC.
- The specific requirements of the CFL should be introduced as a new SEC Subsidiary Document.
- In addition, new provisions would have to be included in Section G to cover the security requirements.
- It is envisioned that there should be no requirements to make amendments to any other SEC Sections, or SEC Subsidiary Documents. The only Subsidiary Documents which would consider firmware would be DCC-centric Subsidiary Documents which may include commands in relation to firmware. The CFL would not impact the operation of any DCC interface.

Statement of impact on likely changes to other Energy Codes:

No Impacts. This proposal is for an entirely standalone system the likes of which does not exist in other industry codes.

Statement of impact on likely Party Categories:

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

- Only Parties responsible for the management of ESME/GSME Devices would make use of the CFL. This is limited to Supplier Parties.
- The CFL may impact Manufacturers, a number of whom are currently in the Other SEC Party category.

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)	☒

The CFL does not need to be integrated to the DCC's systems, therefore it should not have a direct impact on any central system. It may impact User Systems, depending on whether a user seeks to integrate the library in some way. However, this is entirely optional and would already be covered in the scope of any security assessment. As this Modification Proposal introduces new functionality, with solution and system requirements not yet fully defined, whether this constitutes a new central system is currently unknown.

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5. Proposed Timetable

Proposed Timetable for Modification Proposal:

Implementation would be desired as soon as possible.

There should be no need for DCC Impact Assessments. Five working group meetings seems like a logical starting point for undertaking the refinement of this Modification Proposal. Input would be required from:

- DECC, Energy Suppliers, Meter Manufacturers, Ofgem, CESC, TSEG/SSC, SEC Panel

Initial meetings would have to involve Meter Manufacturers as the images can currently be considered their intellectual property, therefore full consent would be required from Manufacturers. Sign off from Manufacturers should also be considered a priority. However, a fully formed proposal is likely to be required before they are able to decide whether to support or reject the Modification Proposal. However, removing firmware developed as a result of a commercial agreement between an Energy Supplier and Device Manufacturer should help reduce concerns from Manufacturers – as referred to in Section 2 of this Modification Proposal.

Proposed working group members and their objectives:

- 1) Suppliers and Manufacturers and other interested parties, but with a focus on Supplier requirements and consequent CFL requirements and delivery model.
- 2) Manufacturers in order to inform them of the proposal with the aim of receiving their approval. This may be achieved through trade associations.
- 3) SSC in order to agree security requirements.

Implementation should be targeted at a release post-DCC Live R1.2 (and R1.3). Therefore a prudent target implementation is November 2017, which is the closest scheduled release to the supply licence holder's readiness obligations. The proposed implementation date will be refined by the necessary lead times to build and develop the Firmware Library and then test that the necessary security provisions required for it are in place and work correctly.

Activity	Date	Comments/Notes	Attendees
Modification Proposal raised	February 2016		
Initial Modification Report (IMR) prepared	XX February – 3 March 2016		
IMR issued to Panel	4 March 2016		
IMR considered by Panel	11 March 2016		
Working Group 1	w/c 21 March 2016	Development of solution requirements and delivery model.	Energy Suppliers, Manufacturers, BEAMA/EUA representatives, Energy UK and other interested parties,

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			SECAS expert technical resource.
Working Group 2	w/c 4 April 2016	Development of solution and requirements.	
Working Group 3	w/c 18 April 2016	Agree Security Requirements and SEC legal drafting for this Modification Proposal	
Sub-Committee input on the final solution developed	25 April – 20 May 2016		TSC and SSC input on final solution (input may also be required from TSC and SSC in-between Working Groups 1-3)
Working Group 4	w/c 23 May 2016	Agree implementation approach, date; and agree consultation questions	
SECAS drafts consultation document	30 May – 3 June 2016		
Working Group reviews consultation document	w/c 6 June 2016		
Consultation document issued	13 June – 4 July 2016	15 working days required for consultation	
SECAS collates consultation responses and circulates to Working Group	4 - 8 July 2016		
Final Working Group meeting (Working Group 5)	w/c 11 July 2016	Discuss consultation responses, provide final views on solution	
SECAS prepares Draft Modification Report using Working Group's assessment and consultation responses	18 – 22 July June 2016		
Working Group reviews Working Groups Consultation response	26 – 29 July 2016		
Draft Modification Report Finalised	1 – 4 August 2016		

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Draft Modification Report issued to Panel	5 August 2016	Panel has 5 days to review	
Panel reviews Draft Modification Report	12 August 2016		
Modification Report phase consultation	17 August – 7 September 2016	15 working days required	
SECAS collates consultation responses and drafts Final Modification Report, and submits to Change Board	8 – 14 September 2016		
Change Board vote	21 September CB		
SECAS issues Change Board report to the Authority	23 September 2016		
Modification Decision by the Authority	28 October 2016	Authority (SoS) 25 working days KPI for Modification decisions	
Contingency			If required
Implementation	December 2016 - November 2017		
Modification Proposal implemented	November 2017		

6. Additional Information

Additional information:

A number of papers were drafted by the SECAS community of experts, each developing the CFL proposal, prior to this Modification Proposal being raised. These papers could be distributed to working group members in advance of any refinement of the proposal to provide background and context. This will aid discussions at the Working Group

The papers included relevant SEC Panel paper references and are set out below:

- SECP_17_1302_04: This paper lay out the original proposal for SECAS COE to develop the proposal.
- SECP_23_1408_04: This paper provides an assessment of the practicality of providing a CFL, taking into account legal, regulatory, technological, economic, security and other factors.
- SECP_27_1112_07: This paper sets out some of the architectural considerations for the CFL.

In addition, Energy UK drafted a paper in March 2014 outlining Supplier's requirements in relation to firmware management: this included the original CFL proposal. The Supplier community still voice their support for this proposal through Energy UK as it is believed to fill a void in the current SMIP arrangements.

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)

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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.