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MP216

‘Incorporation of Category 2 Issue Resolution Proposals into the SEC – Batch 9’

Modification Report

Version 1.0

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Managed by



About this document

This document is a Modification Report. It sets out the background, issue, solution, impacts, costs, implementation approach and progression timetable for this modification, along with any relevant discussions, views and conclusions.

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This document also has three annexes:

- **Annex A** contains the business requirements for the solution.
- **Annex B** contains the redlined changes to the Smart Energy Code (SEC) required to deliver the Proposed Solution.
- **Annex C** contains the Data Communications Company (DCC) Preliminary Assessment.

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1. Summary

This proposal has been raised by Martin Bell from Energy and Utilities Alliance (EUA).

Issue Resolution Proposals (IRPs) identify and resolve issues in the Technical Specifications documents of the SEC. The Technical Specification Issue Resolution Subgroup (TSIRS) has determined all solutions and has requested these be progressed as a Modification Proposal for implementation into the SEC. Implementation of these IRPs will ensure Devices operate as they are intended.

The IRPs in this modification require changes to the Great Britain Companion Specification (GBCS). Details about the individual Proposals are provided below.

The DCC has completed a Preliminary Assessment of these IRPs. The Preliminary Assessment concluded there are minimal changes required to implement this as part of the November 2023 SEC Release and there will be no costs associated with Design, Build and Pre-Integration Testing (PIT). While System Integration Testing (SIT) and User Integration Testing (UIT) are required these will be carried out as part of the SEC Release and therefore not incur specific costs.

This modification will impact Suppliers, Device Manufacturers and the DCC. There are no DCC costs to implement this modification except those associated with SIT and UIT for the Release. This is targeted for the November 2023 SEC Release and is a Self-Governance Modification.

2. Issue

What are the current arrangements?

IRPs identify issues within the SEC Technical Specification documents and put forward a solution to the identified problem. In the early stages of the Smart Metering Implementation Program (SMIP), the Department for Business, Energy and Industrial Strategy (BEIS) took the lead in developing the SEC Technical Specifications. As part of this, BEIS also took responsibility for receiving and responding to issues raised internally, by the DCC, and by other interested parties. Since its inception, several hundred issues have been raised in relation to Technical Specifications through the TSIRS. In some cases, these queries have been resolved by providing an explanation of the Specifications, whilst others have resulted in proposed amendments to the Specifications in the form of IRPs. The IRP solutions identified have been developed by the TSIRS.

What is the issue?

The IRPs included in this proposal, detailed below, require changes to the GBCS.

The individual IRP details for this modification can be found on the Smart Energy Code Administrator and Secretariat (SECAS) website link [here](#) under document name 'MP216 - IRP details'. This document reflects the issue, background information and details of the solution that has been discussed and agreed at TSIRS. They are an integral part of the SEC modification.

IRP640

The Boost Function Event Log is a single log capable of storing entries for the most recent 25 Boost Periods on an Electricity Smart Metering Equipment (ESME) or a Standalone Auxiliary Proportional Controller (SAPC). There is currently ambiguity as to which of the two date-times (start time or end time) should be used as the selection criteria, for determining which log entries are to be returned. Additionally, there is also missing detail from GBCS Table 7.3.8 for the Boost Function Event Log.

IRP658

When processing firmware updates, a Device will have its own policy regarding whether it attempts to transfer a Manufacturer image from the Communications Hub. Although the specifications are not intended to be prescriptive in that matter, currently Devices may require a stored image on that Device to be activated before it can process further updates. If this is the case, then in the situation where a new version of firmware is released and distributed but subsequently is discovered to have a security vulnerability or other issue, then there is no means to replace it prior to activation.

What is the impact this is having?

IRP640

Device Manufacturers can currently interpret the Technical Specifications in different ways which would return different data on Boost Function Event Logs. SECAS notes that as the maximum length of a Boost Period is eight hours, and the minimum is 15 minutes, the difference in outcome between the two approaches (taking the start time or end time) may not be material as the likelihood is that the Boost Period starts and ends on the same day.

The missing detail from GBCS Table 7.3.8 is a defect that needs to be corrected to provide clarity for Device Manufacturers.

IRP658

There is an increased security risk by forcing a Device to activate outdated firmware rather than move directly to latest firmware. Additionally, where a firmware image has been transferred but not activated and a change of Supplier occurs prior to activation, the incoming Supplier may be unable to update the firmware as they would be unaware of the image stored on the Device.

Impact on consumers

Consumers may have issues currently if their Device is holding an unactivated Manufacturer image and it blocks further images from being delivered and activated. There is also the risk that potential vulnerabilities could be introduced by having to activate an image that contains a known defect.

3. Solution

The Proposed Solution is to incorporate these IRPs into the SEC to add clarity and consistency to the Technical Specification. These changes have been discussed and approved by the TSIRS as part of the closure of each IRP.

IRP640

This will specify that the end date-time should be used to select data for the Boost Function Event Log. It will also add the missing data to the affected GBCS tables.

IRP658

This IRP is intended to make it a stated requirement that an Over-the-air (OTA) Client in a Gas Smart Metering Equipment (GSME), ESME, SAPC or Home Area Network Connected Auxiliary Load Control Switch (HCALCS) must not prevent replacement of an un-activated Upgrade Image that it may already be holding.

4. Impacts

This section summarises the impacts that would arise from the implementation of this modification.

SEC Parties

SEC Party Categories impacted			
✓	Large Suppliers	✓	Small Suppliers
	Electricity Network Operators		Gas Network Operators
✓	Other SEC Parties	✓	DCC

Breakdown of Other SEC Party types impacted			
	Shared Resource Providers		Meter Installers
✓	Device Manufacturers		Flexibility Providers

Suppliers are not directly impacted by this modification; they will be impacted by an optional uplift to the GBCS. They will also need to be aware of the potential differing behaviour between Devices that are currently installed.

Device Manufacturers may be impacted by either IRP, depending on how their Devices currently behave. Each Manufacturer will need to assess the impacts to their own Devices.

No responses were received to the Refinement Consultation and therefore no further comments were made about impacts on Suppliers, Manufacturers and Other SEC Parties.

DCC System

There are minimal changes required to implement these IRPs as part of the November 2023 SEC Release.

The GSME, ESME and HCALCS Emulators used for testing will need to incorporate the changes to mirror the new text. Currently the emulators will block a later Manufacturer image if there is an unactivated image stored.

The full impacts on DCC Systems and the DCC's proposed testing approach can be found in the DCC Preliminary Assessment response in Annex C.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Schedule 8 'Great Britain Companion Specification'
- Schedule 11 'Technical Specification Applicability Tables'

The changes to the SEC required to deliver the proposed solution can be found in Annex B.

Technical specification versions

These changes will be applied to the GBCS v4.x series at the time the modification is implemented. Although this issue appears in both the GBCS 3.x and GBCS v4.x series, it has been agreed that there should be no further uplifts to the GBCS v3.x series after the implementation of [MP143 'Incorporating IRPs into GBCS v3 series'](#).

Devices

Devices impacted			
✓	Electricity Smart Metering Equipment	✓	Gas Smart Metering Equipment
	Communications Hubs		Gas Proxy Functions
	In-Home Displays		Prepayment Meter Interface Devices
✓	Standalone Auxiliary Proportional Controllers	✓	Home Area Network Connected Auxiliary Load Control Switches
	Consumer Access Devices		Alternative Home Area Network Devices

IRP640 affects ESME and SAPC by specifying that the end date-time of a Boost Period should be used as the selection criteria for the Boost Function Event Log.

IRP658 affects ESME, GSME, SAPC and HCALCS by specifying that Devices must not prevent replacement of an un-activated Upgrade Image that it may already be holding.

Devices that do not currently behave as described above will require changes.

Consumers

Consumers will be impacted positively as IRP658 will streamline the firmware update process for some Devices and could prevent potential vulnerabilities from being introduced.

Other industry Codes

This modification will not have an impact on any other Industry Codes.

Greenhouse gas emissions

There will be no direct impact on greenhouse gas emissions from this modification.

5. Costs

DCC costs

The DCC Preliminary Assessment showed no costs associated with Design, Build and Pre-Integration Testing.

More information can be found in the DCC Preliminary Assessment response in Annex C.

SECAS costs

The estimated SECAS implementation cost to implement this as a stand-alone modification is one day of effort, amounting to approximately £600. This cost will be reassessed when combining this modification in a scheduled SEC Release. The activities needed to be undertaken for this are:

- Updating the SEC and releasing the new version to the industry.

SEC Party costs

Device Manufacturers may incur costs if their Devices need to change existing behaviour. Suppliers may incur costs from testing these new Devices.

No responses were received to the Refinement Consultation regarding SEC Party costs from implementation of this modification.

6. Implementation approach

Agreed implementation approach

The CSC agreed an implementation date of:

- **2 November 2023** (November 2023 SEC Release) if a decision to approve is received on or before 2 May 2023; or
- **7 November 2024** (November 2024 SEC Release) if a decision to approve is received after 2 May 2023 but on or before 7 May 2024.

The technical specifications are usually only uplifted once per year, with the next scheduled uplift this modification could aim for being the November 2023 SEC Release. Most modifications to technical specifications require six months' notice. The fall-back date is currently the November 2024 SEC Release as it is expected that the 2024 Release schedule will contain the technical specification uplifts within that SEC Release. This will be confirmed nearer the time.

7. Assessment of the proposal

Observations on the issue

The TSIRS concluded that both these IRPs required fixing. It noted that IRP658 may be considered a Category 3 IRP. The DCC has advised that changes are required to the GSME, ESME and HCALCS emulators to mirror the new legal text. Their current behaviour does block later the firmware images where there is an unactivated image on the Device. The Change Sub-Committee (CSC) had no further queries.

The SSC confirmed an interest due to the mitigation of security risk as it could prevent security updates being made to certain Devices.

The OPSG Chair also noted the scale of the issue would probably be impossible to identify as there wouldn't be a specific Alert for the reason the firmware failed to upgrade. They also noted this could require industry guidance advising of what to do when this situation is encountered. SECAS agreed to try to investigate the scale of the impact with TSIRS further.

SECAS presented this modification to the TABASC in January 2023. One TABASC member queried why the standard process for replacing images would not solve the issue that this modification has highlighted. The TABASC Chair explained that some Manufacturers are constrained as the standard forced replacement process doesn't work at Zigbee level due to constraints at GBCS level. The Chair stated this modification is to ensure forced replacements of images on Devices can be replaced.

Solution development

The issues and the solutions have been discussed and agreed upon by the TSIRS. Although the TSIRS is a BEIS-led group, various SEC Parties are represented. The TSIRS agreed the solutions and agreed they should be implemented into the SEC. Please note, no business case analysis is performed by the TSIRS.

Should IRP658 be implemented into the GBCS v3.x series?

The IRP states that the issue appears in both the GBCS 3.x and GBCS v4.x series. However, it was previously understood that there would be no further uplifts to the GBCS v3.x series. SECAS recommended only an uplift to GBCS v4.x series be made for these IRPs. It was previously agreed during the refinement process of [MP143 'Incorporating IRPs into GBCS v3 series'](#) that no further updates would be made to the GBCS v3.x series after the implementation of MP143.

8. Case for change

Business case

IRP658 will mitigate a security risk by ensuring Devices are not forced to upgrade to a firmware version with a known defect. IRP640 provides clarity with regards the correct date-time to be used to provide information, as well as correcting a defect of missing data with the Technical Specifications.

Views against the General SEC Objectives

Proposer's views

The Proposer believes that this modification will better facilitate SEC Objective (a)¹ as the implementation of the IRPs will reduce the risk of future operational issues arising by correcting missing data. They also note that IRP658 would mitigate a security risk and thereby better facilitate SEC Objective (f)².

Industry views

No responses were received during the Refinement Consultation. SECAS presented this modification at the December Working Group meeting to gain further feedback. The DCC clarified that although the Preliminary Assessment returned no costs, there would be some changes to the DCC Emulators. Several members expressed support for the modification, in particular the way this would overcome difficulties experienced during OTA firmware upgrades. One member noted that if this modification is implemented, some Manufacturer firmware may not be available when the SEC Release takes place. As such, Manufacturers device specifications may be out of line immediately after the SEC Release.

Views against the consumer areas

Improved safety and reliability

This change is neutral in this area.

¹ Facilitate the efficient provision, installation, operation and interoperability of smart metering systems at energy consumers' premises within Great Britain

² to ensure the protection of Data and the security of Data and Systems in the operation of this Code

Lower bills than would otherwise be the case

This change is neutral in this area.

Reduced environmental damage

This change is neutral in this area.

Improved quality of service

Changes to the firmware upgrade process will make this more efficient, particularly in events of Change of Supply where an unactivated image sits on the Device.

Benefits for society as a whole

This change is neutral in this area.

Appendix 1: Progression timetable

This modification will be presented to the Change Sub-Committee on 17 January 2023 for progression to Report Phase. It will then be issued for Modification Report Consultation and a Change Board vote will be held on 23 February 2023 under Self-Governance.

Timetable	
Event/Action	Date
Draft Proposal raised	8 Sep 2022
CSC converts Draft Proposal to Modification Proposal	20 Sep 2022
Preliminary Assessment requested	21 Sep 2022
Preliminary Assessment returned	31 Oct 2022
Refinement Consultation	7 – 25 Nov 2022
Modification discussed with the Working Group	7 Dec 2022
Modification discussed with the TABASC	5 Jan 2023
<i>Modification discussed with SSC</i>	<i>11 Jan 2023</i>
<i>Modification Report approved by CSC</i>	<i>17 Jan 2023</i>
<i>Modification Report Consultation</i>	<i>18 Jan – 8 Feb 2023</i>
<i>Change Board Vote</i>	<i>22 Feb 2023</i>

Italics denote planned events that could be subject to change

Appendix 2: Glossary

This table lists all the acronyms used in this document and the full term they are an abbreviation for.

Glossary	
Acronym	Full term
BEIS	Department of Business, Energy and Industrial Strategy
CSC	Change Sub-Committee
DCC	Data Communications Company
ESME	Electricity Smart Metering Equipment
EUA	Energy and Utilities Alliance
GBCS	Great Britain Companion Specification
GSME	Gas Smart Metering Equipment
HCALCS	Home Area Network Connected Auxiliary Load Control Switch
IRP	Issue Resolution Proposals
OPSG	Operations Group
OTA	Over-the-air
PIT	Pre-Integration Testing
SAPC	Standalone Auxiliary Proportional Controller
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	System Integration Testing
SMIP	Smart Metering Implementation Program
SMKI PMA	Smart Metering Key Infrastructure Policy Management Authority
SSC	Security Sub-Committee
TABASC	Technical Architecture and Business Architecture Sub-Committee
TSIRS	Technical Specifications Issue Resolution Sub-group
UIT	User Integration Testing