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Stage 03: Final Modification Report

SECMP0002:

Add new Command to reset Debt Registers

Summary

This Modification Proposal seeks to add a new Smart Metering Equipment Technical Specification (SMETS) Command to allow Users to reset any of the three debt registers on an Electricity Smart Metering Equipment (ESME) or Gas Smart Metering Equipment (GSME).

Working Group Conclusions



- The Working Group (WG) unanimously believes that SECMP0002 should be approved.

Impacts



- Supplier Parties;
- Other SEC Parties;
- Data and Communications Company (DCC);
- DCC Central Systems; and
- Party interfacing systems

What stage is this document in the process?

01	Initial Assessment
02	Refinement Process
03	Modification Report
▶ 04	Decision

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About this Document

This document is the Final Modification Report (FMR) for SECMP0002. This document provides detailed information on the issue, solution(s), impacts, costs, industry consultation as well as WG and Panel discussions and conclusions on the modification.

This document has four attachments:

- Attachment A contains the legal text changes to support this modification;
- Attachment B contains the Solution Design Specifications;
- Attachment C contains the full responses to the Working Group Consultation (WGC); and
- Attachment D contains the full responses to the Modification Report Consultation.

The Change Board will consider this modification at its meeting on 18th April 2018, where it will determine whether SECMP0002 should be approved or rejected by the Authority.

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1. Summary

What is the issue?

Currently, there are no Smart Metering Equipment Technical Specification (SMETS) Commands to reset debt registers on an Electricity Smart Metering Equipment (ESME) or a Gas Smart Metering Equipment (GSME). This means that the User will have to utilise multiple Commands in order to eradicate the debt that is displayed to the Consumer on a Smart Metering System (SMS).

If one of the Commands in the process was to fail, the full reset of the debt register would be incomplete. This could potentially result in inaccurate data being held in the debt registers. The Proposer has highlighted that using multiple Commands would be cumbersome and could cause confusion for the Consumer.

What is the Proposed Solution?

SECMP0002 seeks to add new SMETS Commands so that the two Time Debt Registers and the Payment Debt Register can be independently reset to zero.

Impacts

Party

Large Supplier Parties	x	Small Supplier Parties	x
Electricity Network Parties		Gas Network Parties	
Other SEC Parties	x		

System

DCC Systems	x	Party interfacing systems	x
Smart Metering Systems	x	Communication Hubs	
Other systems			

Modification Path

SECMP0002 was initially considered by the Panel to have a material impact on existing and future Energy Consumers, and therefore agreed that it should be progressed as a Path 2: Authority-determined modification (as per SEC Section D2.6 (b)).

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As the modification requires changes to Technical Specifications, the Department for Business, Energy and Industrial Strategy (BEIS) has indicated that SECMP0002 will also require European Commission (EC) Notification.

Implementation Costs

The total estimated central implementation cost to deliver SECMP0002 is approximately £2,452,796. This total cost consists of:

- **£3,000** in SEC Administration effort; and
- **£2,449,796** in DCC effort.

Implementation Date

The Panel approved an implementation date for SECMP0002 of:

- **27th June 2019**, if a decision to approve is made by 27th May 2018; or
- **7th November 2019**, if a decision to approve is made after 27th May 2018, but on or before 7th October 2018.

Working Group's views

The WG believes **by majority** that SECMP0002 does better facilitate SEC Objectives (a) and (c). The WG therefore believes that this Modification Proposal should be **approved**.

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2. What is the issue?

Background

In accordance with the SMETS, ESMEs and GSMEs are required to have three debt registers. These are:

- one Payment Debt Register, where the debt is recovered by deducting a configurable percentage of each credit added; and
- two Time Debt Registers, where the debt is recovered by deducting a specified amount from the Meter Balance per period of time.

Similar to the Meter Balance¹, there are Commands² to adjust these Debt Registers and read the values stored in them. However, unlike the Meter Balance, there are no SMETS Commands to reset these Debt Registers to zero.

What is the issue?

There are a number of operational scenarios where a Supplier User will need to eradicate the debt that is displayed to a Consumer on their SMS.

The Proposer (Npower) highlights that, based on current arrangements, Supplier Parties will have to utilise multiple Commands to eradicate the debt recorded on the three Debt Registers on an ESME or GSME. For example:

- The Adjust Debt Command only allows for a positive or negative adjustment of these registers, so a reset can be achieved by reading the value and adjusting by the requisite amount. The value of the adjustment would have to take into account any pending payments or time based debt to be able to calculate the accurate amount.
- The other mechanism to achieve a reset is to add a large credit to the meter so that any excess is rolled onto the Meter Balance and then resetting the Meter Balance.

Whilst noting that the above options are functional in eradicating debt, the Proposer believes that the mechanisms will be cumbersome to operate. This is because if one Command in the chain fails, the full re-set may not be completed and will potentially leave the debt registers inaccurate.

¹ SMETS2 - the Meter Balance is the amount of money in Currency Units as determined by ESME/GSME. If operating in Prepayment Mode, the Meter Balance represents ESME/GSME's determination of the amount of credit available to the Consumer (excluding any Emergency Credit Balance). If operating in Credit Mode, it represents ESME/GSME's determination of the amount of money due from the Consumer since the Meter Balance was last reset.

² Commands - the value of a Common Object included in each Service Request and Signed Pre-Command to indicate to the DCC if that message has to be: transformed to an Unsigned GBCS Payload and returned to the User for signing; sent to a Device; or executed by the DCC.

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The current mechanisms to reset debt may also confuse the Consumer if they happen to be looking at the meter or In-Home Display (IHD) at the time these operations were being carried out.

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3. Proposed Solution

Solution

SECMP0002 proposes to add a new Command so that each of the three Debt Registers on an ESME or GSME can be reset to zero independently.

Similarly to the reset Meter Balance Command, the new reset Commands will be usable when an ESME or GSME is in both credit and prepayment mode. However, in line with current SMETS requirements, the Commands will only affect a debt recovery when in prepayment mode.

The Commands will report success if the Debt Register in question is successfully set to zero once the Command has been executed. Responses to these Commands will not contain any data that can be considered as 'personal' in accordance with the Data Protection Act. Thus, there are no Response encryption requirements.

From a DCC User perspective, these Commands can be executed through a new Service Request (SR) 2.4 'Reset Debt Register', where there will be an option to reset a Debt Register to zero. Only one Debt Register can be reset at a time.

The full detailed solution requirements can be found in the **Solution Design Specification** document attached (**Attachment B**).

Draft legal text

The above changes will be mandated through the relevant version of the SEC that is released at the time this modification is implemented, and will apply to all newly installed ESME and GSMEs from that date.

The proposed legal text changes to the SEC are provided in **Attachment A**.

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4. Impacts

The following section sets out the impacts associated with the implementation of SECMP0002.

SEC Party impacts

Large Supplier Parties	X	Small Supplier Parties	X
Electricity Network Parties		Gas Network Parties	
Other SEC Parties	X		

Large and Small Supplier Parties

The use of the new SR associated with this modification will be optional, not mandatory. Therefore, Large and Small Supplier Parties will only be impacted should they choose to send and receive the new SR, as it will require updates to their DCC User Interface. Suppliers that wish to use the new SR will have the ability to reset the three Debt Registers on an ESME or GSME.

Other SEC Parties

Other SEC Parties, specifically Meter Manufacturers, will be impacted by this modification. This is because SECMP0002 adds additional ESME and GSME requirements into the SMETS.

This modification does not require retrospective changes and therefore there are no updates required to ESME and GSME already installed.

Central System impacts

DCC Systems	X	Party interfacing systems	X
Smart Metering Systems	X	Communication Hubs	
Other systems			

DCC Systems

The DCC has advised, through the full DCC Impact Assessment, that SECMP0002 will impact the Data Service Provider (DSP) Systems, the Communication Service Provider

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(CSP) North Systems, and the Great Britain Companion Specification (GBCS) For Industry (GFI).

The main impacts on the DSP include:

- introduction of one new SR into the DCC User Interface;
- required schema updates for the Message Mapping Catalogue (MMC);
- uplift to Parse and Correlate to support new the Commands; and
- new Anomaly Detection Thresholds (ADTs) to be defined.

The main impact on CSP North is that updates are required to message categorisation for billing purposes.

Smart Metering Systems

SECMP0002 proposes new ESME and GSME mandated functional requirements and requires changes to SMETS. Therefore, this modification will impact SMS.

Party Interfacing Systems

SEC Parties that implement SECMP0002 will be required to update their DCC User Interface to send the proposed new SR 2.4 'Reset Debt Register'.

Testing

The DCC will be required to carry out Pre-Integration Testing (PIT) and System Integration Testing (SIT) for SECMP0002.

SECMP0002 will also require Supplier Parties who choose to implement the modification to demonstrate that they are able to support the sending of the new SR and the receiving of the Service Response. Therefore, the DCC shall provide Testing Services to support the implementation of SECMP0002 to prove:

- the DCC User/Test Participant can successfully execute the SRs and can use them effectively in Production; and
- that the code should be uplifted into Production.

Further details of the requirements relating to User Testing can be found in the Solution Design Specification (**Attachment B**).

SEC and Subsidiary Document impacts

SECMP0002 requires changes to the following [SEC documentation](#):

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- SEC Schedule 8 – GBCS;
- SEC Schedule 9 – SMETS;
- SEC Schedule 11 – Technical Specification Applicability Tables;
- SEC Appendix E - DCC User Interface Services Schedule;
- SEC Appendix AD – DCC User Interface Specification (DUIS); and
- SEC Appendix AF – Message Mapping Catalogue.

Consumer impacts

The WG has identified positive impacts on Consumers because the modification mitigates the risk of failure when resetting Debt Register on an ESME or GSME. Therefore, the proposed new Commands will minimise the chances of misleading the Consumer.

Impacts on other industry codes

There are no impacts on other industry codes.

Greenhouse Gas Emission impacts

There are no impacts on Greenhouse Gas Emissions.

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5. Costs

Estimated Implementation costs

The total estimated implementation cost to delivery SECMP0002 is approximately **£2,452,796**. This cost comprises of £3,000 in SECAS effort and £2,449,796 in DCC effort.

A more detailed breakdown can be found in the tables below.

SEC costs

The estimated SEC implementation cost is detailed in the table below:

SECAS implementation costs		
Implementation Activity	Effort (man days)	Cost
Application of approved changes to the SEC. Publication of new version of the SEC on the SEC Website and issuance to SEC Parties. Review and updated any impacted SEC guidance materials.	5	£3,000 ³

DCC costs

The estimated DCC implementation cost is detailed in the table below:

DCC implementation costs (excluding VAT)	
Implementation Activity	Cost
Design	£24,921
Build	£1,161,514
Pre-Integration Testing	£1,263,361
Total estimated DCC implementation cost:	£2,449,796

³ SEC man day effort based on a blended rate of £600 per day.



6. Implementation

Implementation Date

The Panel agreed an implementation date for SECMP0002 of:

- 27th June 2019, if a decision to approve is made by 27th May 2018; or
- 7th November 2019, if a decision to approve is made after 27th May 2018 but on or before 7th October 2018.

The DCC has advised that it requires **13 months** lead time, from the date of approval, to implement the proposed changes. This includes 12 months in line with the DCC Release Management Policy plus an additional month to undertake integrated Release planning.

SEC Parties have advised that they will require a maximum of **12 months** lead time, from the date of approval, to implement the changes required to Party Interfacing Systems and processes.

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7. Working Group Discussions

Terms of Reference

The WG has considered and answered the questions put forward in the SECMP0002 Terms of Reference (ToR).

The WG Consultation was issued on 5th January 2018 and closed on 26th January 2018. The full responses can be found in **Attachment C**.

A summary of the WG discussions, consultation responses and conclusions are detailed below.

Scope of SECMP0002

Considerations were made as to whether the ability to reset the Accumulated Debt Register on an ESME or GSME should also be included in the modification. The Accumulated Register records the debt recovered and accumulated debt. The WG agreed that the modification should only seek to reset the Time 1 and Time 2 Debt Registers and the Payment Debt Register on an ESME and GSME. It was also noted that each Debt Register should be reset individually by one Command.

The DCC also questioned whether there should be any differentiation in processing the new Commands between meters that are in pre-payment and credit mode. A dependency on a meter being in pre-payment mode was not considered to be applicable by the WG.

The WG discussed whether the new Command should be able to both reset and adjust the debt register. The WG considered that the new Commands should not have dual functionality as this is not in line with other SMETS Commands.

The WG also considered whether the modification should provide Supplier Parties with the ability to reset multiple Debt Registers using one Command, rather than allowing only one Debt Register to be re-set at a time. The WG initially agreed that each Debt Register should be reset individually. This is because the majority of existing SRs result in a single Use Case being sent to ESME/GSME. The ESME/GSME will then send a single response which is passed on to the Service User. This allows the Service User to easily match the Service Response to the SR.

A Large Supplier Party, through the WG Consultation, highlighted that the solution could be optimised further by including this capability. They noted that being limited to re-set one Debt Register at a time could increase DCC System traffic.

Conclusion

The WG agreed that the Accumulated Debt Register should not be included in SECMP0002 and that a pre-payment mode dependency is also not required. It was also

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agreed that the new Commands should only reset one of the Debt Registers at a time and should be separate from the set of existing adjustment Commands.

Privacy Impacts

The WG questioned the privacy impacts of the modification, and whether the data in the Commands will need to be encrypted. It was noted that the Debt Register data will not be readable if it is encrypted and therefore, it was agreed that input from the BEIS was required.

SECAS contacted BEIS in regard to encryption and potential privacy issues. On the former, BEIS' understanding is that the proposed modification will not result in outbound sensitive information being transferred from the meter.

In relation to privacy, BEIS informed the WG that it is the WG's responsibility to consider and conduct a privacy assessment if necessary. The WG noted that the proposed modification will result in less data being communicated than the current design, and also that the new Commands will minimise the amount of sensitive information being transferred.

SECAS also highlighted that the default response for the ZigBee Command is 'successful' or 'unsuccessful', whereas the GBCS ESME is more complex. The WG was asked to confirm whether setting the response value from ESME to zero was acceptable, to address privacy issues that will arise from returning other values.

The WG noted that if the previous value of a register were to be read and returned in a Device Language Message Specification Companion Specification for Energy Metering (DLMS COSEM) response, it would need to be encrypted as per the Blue Book. This could cause delays in implementation.

It was also noted that although setting the response value for ESME at zero may result in quicker implementation, it is not strictly conformant and could possibly affect DLMS certification. The WG concluded that returning the previous value is not required.

Conclusion

The WG agreed that encryption is not required and that the proposed Command does not need to return the previous value on the Debt Register to the Supplier User. This has been reflected in the Solution Design Specification (Attachment B).

Security Impacts

The WG considered that the modification will need to be factored into the Threshold Anomaly Detection Procedure (TADP). Given that the new Commands shall be Critical,

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they will be in scope of threshold anomaly detection, so affecting both DCC Users and the DCC in this area.

Further considerations were also made on how the gas Command groups compile and how the TADP will treat this traffic in the threshold count. It was highlighted that the gas command groups a number of SRs together and passes figures to the device, rather than requesting the debt registers to be 'zero'.

As the additional Commands will be Critical SRs, the WG observed that new packet inspection requirements will need to be set and managed, to be consistent with the planned mechanisms for existing Commands. The WG agreed that the details of the modification should be raised with the Security Sub-Committee (SSC), specifically in relation to whether packet inspection would be needed.

The SSC agreed that the additional GSME SRs should include packet inspection to align it with all other SRs. SECAS clarified that packet inspection will be required if the value is adjusted to ensure the value has not been interfered with.

Through the Preliminary Assessment (PA), the DCC requested confirmation as to whether Attribute Limit Anomaly Detection for the new Commands will be required. SECAS raised this with the SSC, which advised that:

- the GSME Commands should be subject to Attribute Limit Anomaly Detection. This is because the GSME Commands include a supply affecting parameter. In this case, the Attribute Limit check should ensure that the value of that supply affecting parameter is set to zero; and
- the ESME Commands are not required to be subject to Attribute Limit Anomaly Detection. This is because the reset behaviour is achieved by the reset method, and not by a parameter whose value is set to zero.

The WG agreed that these changes should be included in the solution.

Conclusion

In summary, it was agreed that:

- the modification will need to factor in TADP requirements;
- packet inspection is required for the GSME Commands, but not the ESME Commands; and
- Attribute Limit Anomaly Detection is required for the GSME Commands, but not the ESME Commands.

These requirements have been included in the Solution Design Specification.

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DCC Costs

Several WGC respondents raised concerns in relation to the DCC costs to implement this modification (along with other modifications seeking to change DCC Systems). It was noted that the SECMP0002 design, build and test costs seemed significantly high.

One Large Supplier Party also stated that they were interested to understand further details of how the DCC calculated the implementation costs. Noting that the modification seemed to be a relatively minor change to the DCC Systems. SECAS requested further information from the DCC on behalf of the WG prior to the DMR being issued to the SEC Panel. The Modification Report will be updated with any further information that is provided.

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8. Working Group Conclusions

The WG's **by majority** view is that SECMP0002 better facilitates General SEC Objectives (a) and (c) and should be **approved**.

Benefits and drawbacks of SECMP0002

The WG **by majority** believe that the benefits of this modification outweigh the drawbacks and the cost to implement SECMP0002. The **minority** of the WG believe that the benefits do not outweigh the implementation costs of the modification.

The Proposer and the WG have identified the following benefits and drawbacks related to SECMP0002.

Benefits

The WG has identified the following benefits:

- The modification will reduce DCC System and User System traffic as Supplier Parties will be able to use one Command to reset Debt Registers rather than utilising multiple Commands; and
- SECMP0002 will reduce the risk of failure when resetting Debt Registers as only one Command is required, thus reducing the risk of misleading Consumers.

Drawbacks

The WG has identified the following drawbacks:

- several Supplier Parties have indicated that they have needed to implement workarounds to reset Debt Registers to zero until this modification can be implemented. It was noted by the WG and through WGC responses that the development of these workarounds may diminish the business case for SECMP0002. This is because there is currently no evidence that these workarounds will not be sufficient in production; and
- one Large Supplier Party noted that the modification may increase DCC System traffic because only one Debt Register can be reset at one time.

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Views against the General SEC Objectives

Objective (a)⁴

WG members **unanimously** believe that SECMP0002 better facilitates General SEC Objective (a) because Suppliers will be able to make more efficient use of the DCC System by replacing two Commands to reset Debt Registers with one. This will reduce the traffic across Supplier and DCC systems, thus reducing the risk of failures.

Objective (c)⁵

The **majority** of WG members believe that SECMP0002 better facilitates General SEC Objective (c) because it reduces the risk of failed resets of Debt Registers. The Proposer and the WG noted that sending two Commands to perform one operation increases the chance that either Command could fail. The Consumer could also be looking at their Smart Metering System at the time that these Commands were being applied. Therefore, the proposed new Commands will minimise the chances of misleading the Consumer.

One SEC Party does not believe that a direct correlation between debt information and Consumer energy management has been established. Therefore, they did not agree that this modification will better facilitate SEC Objective C and was therefore neutral against this objective.

Draft legal text changes

The WG unanimously believes that the draft legal text changes deliver the intention of the Modification Proposal.

Implementation approach

The WG unanimously agrees with the implementation approach.

⁴ to facilitate the efficient provision, installation and operation, as well as interoperability of Smart Metering Systems at Energy Consumers' premises within Great Britain

⁵ 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



9. Panel discussions & conclusions

Panel's discussions

The Panel considered that the benefits case put forward for this modification was thin when compared to the approximately £2.5m central implementation costs that would be incurred if it was approved. SECAS noted that industry interest in this modification had notably waned towards the end of its progression, and it had struggled to convene a viable Working Group meeting in recent months. It therefore believed that returning this to the Working Group for further work was unlikely to yield anything more detailed. SECAS recommended that the modification proceed to Report Phase. If the Change Board and the Authority felt the benefits of this modification had not been made strongly enough, then it would be more pragmatic to reject the modification rather than send it back. The Panel agreed with this approach.

Panel's conclusions

The Panel **unanimously** agreed that due process has been followed and that SECMP0002 should progress to Modification Report Consultation.

The Panel also agreed that SECMP0002 is a Path 2: Authority Determined Modification Proposal and that the draft legal text changes to the SEC deliver the intention of the modification.

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Appendix 1: Glossary

The table below provides definitions of the terms used in this document.

Acronym	Term
ADT	Anomaly Detection Threshold
BEIS	The Department for Business, Energy and Industrial Strategy
CH	Communications Hub
CSP	Communication Service Provide
DCC	Data Communications Company
DLMS COSEM	Device Language Message Specification Companion Specification for Energy Metering
DMR	Draft Modification Report
DSP	Data Service Provider
DUIS	DCC User Interface Specification
EC	European Commission
ESME	Electricity Smart Metering Equipment
GBCS	Great Britain Companion Specification
GFI	GBCS For Industry
GSME	Gas Smart Metering Equipment
IHD	In Home Display
MMC	Message Mapping Catalogue
MRC	Modification Report Consultation
PA	Preliminary Assessment
PIT	Pre-Integration Testing
SEC	Smart Energy Code
SIT	System Integration Testing
SMETS	Smart Metering Equipment Technical Specification

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Acronym	Term
SMS	Smart Metering System
SR	Service Request
SSC	Security Sub-Committee
TADP	Threshold Anomaly Detection Procedure
TOM	Tapping Off Mechanism
ToR	Terms of Reference
WG	Working Group
WGC	Working Group Consultation
ZME	Zigbee Smart Energy

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