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Stage 01: Initial Modification Report

SECMP0030: Demand Management of DCC Systems

This proposal recommends an enduring solution that protects the DCC System when aggregate demand cannot be satisfied simultaneously. This modification proposes establishing appropriate rules to enable the prioritisation of Service Requests and Service Responses across the DCC User Interface and the prioritisation by the DCC of Commands to be sent to Communications Hub Functions and Certificate Signing Request volumes in an equitable, fair and transparent way. Rules by which DCC will actively control Device Alert volumes should also be considered for inclusion in this modification.

P2

The recommendation is that this modification should:

- follow Path 2: Authority Determined
- be progressed through the Refinement Process

Ref



Potential Impact on:

- The Data and Communications Company (DCC)
- DCC Users
- Consumers

What stage is this document in the process?

01	Initial Modification Report
02	Refinement Process
03	Report Phase
04	Final Modification Report

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SECMP0030 - Initial
Modification Report

13th January 2017

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About this document

This document is an Initial Modification Report (IMR). It enables the SEC Panel to carry out its initial consideration on how this Modification Proposal should be progressed through the Modification Process.

The Panel considered this report at its meeting on 13th January 2017.

This Initial Modification Report has the following three attachments:

- **Attachment A: SECMP0030 - Modification Proposal Form**
- **Attachment B: Draft Managing Demand Section – 9 June 2015**
- **Attachment C: Working Group Terms of Reference**

1. Summary

This section provides an overview of SECMP0030. For further details on the Modification Proposal, please refer to subsequent sections. Defined terms and acronyms used in this IMR are listed in the Glossary (Appendix 1) of this document.

1.1 Why Change?

Currently, the SEC does not include provisions for where demands on the DCC Systems approaches or exceeds the processing capacity of those systems. The Proposer (Smart DCC Ltd) highlights that if aggregate demand cannot be met, DCC Users could experience fluctuations in service performance and extended processing times. In extreme cases, DCC Systems could fail, resulting in the suspension of DCC Services. This would have considerable adverse impacts for DCC Users and Consumers.

1.2 Solution

SECMP0030 seeks to establish rules by which the DCC will actively control demand management across DCC Systems. It has been recommended that these rules be combined with a capacity allocation formula, operating on a demand management cycle of one second. When aggregate demand is at risk of approaching or exceeding system capacity, DCC Users who have exceeded their allocation would have their messages managed as defined by the rules resulting from this modification.

1.3 Potential Impacts

SECMP0030 is expected to impact the DCC and all DCC Users.

1.4 Proposed Progression

The Proposer and SECAS recommend that SECMP0030 is progressed as a Path 2 Authority Determined modification. This is due to the modification potentially having a material effect on:

- existing or future Energy Consumers (SEC Section D2.6(a));
- competition in the Supply of Energy (SEC Section D2.6(b)); and
- on access to or privacy of Data, on security of the Supply of Energy, and/or on the security of Systems and/or Smart Metering Systems (SEC Section D2.6(c)).

This modification will impact DCC Systems and possibly User Systems. As per the requirements in SEC Section D3.9(c), it has therefore been recommended that SECMP0030 undergoes refinement by a Working Group.

2. Why Change?

2.1 Background

The DCC is responsible for maintaining a reliable system and, with the co-operation of DCC Users, will manage demand and processing times. As message volumes increase, there could be periods where aggregate demand approaches or exceeds DCC System capacity, specifically where a large number of messages are submitted within a short time-scale (e.g. peak second demand).

SEC Section H3.27 and Section L8.11 set out provisions that require the DCC to raise a modification, as soon as reasonable practicable, to propose appropriate rules to enable the prioritisation of Service Requests and Service Responses (messages) across the DCC User Interface and the prioritisation by the DCC of Commands to be sent to Communications Hub Functions and Certificate Signing Requests, when aggregate demand cannot be satisfied. While these specific requirements in Section H3.27, on the DCC to raise a modification are not active, the DCC has chosen to raise the proposal.

The Department for Business, Energy and Industrial Strategy (BEIS (formally the Department of Energy and Climate Change (DECC))) identified the need for a process to avoid or 'mitigate material adverse effects on the performance of the DCC Systems'. They produced a paper in June 2015 setting out draft SEC legal text which could form the basis of DCC's approach to demand management (Attachment C). This approach was to limit the number of communications by message type and defined an allocation formula to determine each User's allocation for each message type. Although this was not progressed by BEIS, the approach forms the basis of this modification in order to be developed through the Refinement Process.

2.2 What is the issue?

The DCC are required to process each User's messages (i.e. Service Request and Responses) in accordance with the Target Response Times outlined in SEC Section H3.14 and SEC Appendix E (DCC User Interface Service Schedule).

In situations where the DCC Systems approach or exceed processing capacity, Users could experience variations to service performance and delays to Target Response Times. Also, in extreme cases, DCC Systems could fail, resulting in the suspension of DCC Services for Users which could have an adverse effect on the Consumer experience. If a User is disconnected, not only are they incapable of sending Service Requests, but also they will not be able to receive Service Responses, Alerts and/or DCC Alerts. While the likelihood of a User being disconnected may be low and is certainly unknown, the possibility is real if DCC Systems were to fail.

It is also worth noting that if the DCC do not process messages within the Target Response Times or DCC Services are suspended, they will be in breach of their DCC Code Performance Measures.

Currently, there are no SEC provisions to protect DCC Systems during periods where there are high volumes of messages and are at risk of approaching or exceeding capacity.

The Proposer (Smart DCC Ltd) highlights that the DCC System capacity is a finite resource and to scale the DCC System to guarantee that aggregate demand could not exceed system capacity, would incur higher charges for all Users. This is due to the need for greater redundancy and duplication in the system, which in the view of the Proposer is neither economic or efficient.

The existing options available to the DCC to protect the DCC Systems are to:

1. limit the throughput of the DCC User Gateway; or
2. disconnect a User from the DCC System.

The Proposer has noted that it is their view that both of these options are disproportionate and are not guaranteed to be fair, equitable or transparent.

3. Solution

3.1 What is the solution?

The Proposer (Smart DCC Ltd) believes that fair, equitable or transparent process can be achieved by implementing an enduring demand management solution, as message types deemed a priority should be preserved, allowing priority processes (e.g. the installation and commission of Communication Hubs) and vulnerable Customer activities (e.g. topping up for pre-payment customers), to continue during periods when aggregate demand exceeds DCC System capacity.

The Proposer therefore seeks to establish appropriate rules by which the DCC will actively control demand management across the DCC Systems, during periods where aggregate demand cannot be satisfied. This includes rules for:

- Service Requests and Service Responses across the DCC User Interface;
- prioritisation by the DCC of Commands sent to Communication Hub Functions; and
- Certificate Signing Request volumes.

The Proposer notes that rules by which the DCC will actively control Device Alert volumes should also be considered for inclusion, during the refinement of the modification.

These rules will be combined with a capacity allocation formula, operating on a demand management cycle of one second, to protect the DCC System. When the DCC identifies that aggregate demand is at risk of not being satisfied within the DCC System, Users who exceed their allocation would have their messages managed as defined by the message rules resulting from this modification.

The Proposer has recommended that the following business requirements are developed.

1. An agreed solution and criteria that identifies how and when demand management should be engaged and disengaged;
2. An agreed solution that enables continued service provision for priority messages during periods when aggregate demand cannot be satisfied (including what messages should be prioritised during such periods and the method for setting message priority);
3. The technical and process requirements necessary to implement the solution; and
4. The regulatory cover (i.e. the necessary SEC legal and technical drafting) to implement the agreed solution.

User guaranteed allocation of DCC System capacity

The modification also seeks to introduce a guaranteed allocation of DCC System capacity for each DCC User. The Proposer considers that such an allocation should be based on a capacity allocation formula, which should be based on a weighted proportionality principle. This weighted proportionality principle should be an allocation scaled using one or more weighting factors. The principle weighting factors to consider are:

- The number of meters the User is serving; and
- The Users charging group contribution to meeting DCC fixed costs.

Additional weighting factors to consider for inclusion in the final capacity allocation formula include, but are not limited to:

- Service Request, Certificate Signing Request and Communication's Hub forecast volumes; and
- Historic User's allocation compliance.

In additional consideration should be given to whether to allocate capacity, for each web service: 'Transform Service', 'Send Command Service', and 'Non-Device Service' (in each case as defined in the DCC User Interface Specification), not only for each User. This also will need to be considered during refinement.

This element of the proposed solution should ensure that:

1. all Users should receive a guaranteed allocation of DCC System capacity to support business as usual operations and provide service certainty;
2. guaranteed allocation values are reviewed at a frequency that balances accuracy against any detrimental impact from increasing the frequency of calculation and optimised based on performance data and adjusted during periods of maintenance;
3. the sum of total allocations cannot exceed the safe operating limit of DCC Systems;
4. by exception, these guaranteed allocations can be temporarily resized with the authorisation of the DCC, in instances where a User has submitted a request to exceed their allocation, within a specified period and by a predefined value;

Demand management process

Where aggregate demand cannot be satisfied within the DCC System, Users above their allocation should have their non-priority messages subjected to a demand management process to protect the system first. If needed priority messages will be subjected to the same demand management process if the DCC System remains at risk. The Proposer has highlighted a number of options available to prioritise messages:

- limiting the number of messages of a specific type;
- rejecting or queueing any messages of a specific type;
- rejecting or queueing any messages above a specific size; and
- prioritising messages based on the required Target Response Times (as per the requirements in SEC Section H3.14).

This element of the proposed solution should ensure that:

1. User within their guaranteed allocation will remain unaffected;
2. where a User's guaranteed allocation has been resized, if DCC System demand approaches critical levels during this period, Users who exceed their allocation and who have not requested permission to exceed their allocation will have their messages subjected to a demand management process, before those that have permission to exceed their allocation;
3. where a User's messages are subject to the demand management process they should be notified and provided with a diagnostic report once normal service has resumed; and
4. a cool-down period should apply after a User's messages has been subject to the demand management process and messages subject to this process should be reinstated in an equitable, fair and transparent way.

3.2 Critical Friend input and TABASC input

Initial Critical Friend input

Prior to SECMP0030 being raised, SECAS provided input to the Proposer as part of the Critical Friend process. SECAS suggested that additional technical detail of the proposed solution be included in the Modification Proposal Form. The Proposer noted that the modification introduces the core principles to aid solution development, but the agreed process and technical solution should be developed through the Refinement Process with a Working Group.

Initial TABASC input

As SECMP0030 relates to matters that have already been discussed through industry and BEIS, SECAS recommended that the draft Modification Proposal Form was discussed by the Technical Architecture and Business Architecture Sub-Committee (TABASC), prior to the proposal being formally submitted. The draft Modification Proposal was subsequently presented to TABASC at its December 2016 meeting.

The TABASC suggested that further technical detail was included in the proposed solution and commented on whether Device Alerts should be included within the scope of the modification. The Proposer agreed that Device Alerts should also be considered by the Working Group during refinement.

TABASC also discussed the beneficiary of the modification and noted that if DCC Service Providers are currently contracted to provide services at a defined cost and this modification seeks to reduce operating costs for those Service Providers, then the cost for implementation should be borne by the DCC and its Service Providers. The Proposer agreed that this should be considered throughout the Modification Process.

3.3 Requested Implementation

The Proposer requested that this modification be implemented as soon as possible. As SECMP0030 will impact the DCC Systems, subject to the necessary DCC and/or User lead time to implement the modification, it is expected that the earliest implementation date would be the November 2018 release. The Working Group will consider this implementation date when recommending an implementation approach as part of the development of the Modification Proposal during the Refinement Process.

3.4 Views against SEC Objectives

The table below highlights the Proposer's views on how this Modification Proposal would better facilitate the achievement of the applicable SEC Objectives.

Proposers views against the SEC Objectives	
General SEC Objective	Proposer views
(a) To facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain.	The prioritisation of message types during periods of peak demand accompanied by the allocation of capacity in a fair and transparent way, will support the delivery of the first General SEC Objective, by enabling the continued delivery of critical message

Proposers views against the SEC Objectives	
General SEC Objective	Proposer views
	types during periods when aggregate demand cannot be satisfied • This modification also aims to protect the efficient installation and operation of Smart Metering Systems by prioritising capacity for installation and commissioning, thereby avoiding delays to the installation and commissioning process. • It also reduces the impact on Consumers during periods when aggregate demand cannot be satisfied by prioritising critical message types, protecting the public image of the service and allowing critical functions to continue (e.g. pre-pay top-ups) • In the absence of any form of active demand management of the DCC System to prevent its failure during periods when aggregate demand could not be met, the system would need to be scaled, to provide greater redundancy and duplication to protect the system. This would be neither efficient or economical.
(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.	• In its aim to prevent network failure and preserve the performance of the network for Users and Consumers, this modification enhances DCC's ability to discharge its obligation to maintain the system under its licence.
(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.	• In protecting the DCC System in a fair, equitable and transparent way this proposal will support effective competition between persons engaged in, or in Commercial Activities connected with, the Supply of Energy.
(f) the sixth General SEC Objective is to ensure the protection of Data and the security of Data and Systems in the operation of this Code.	• DCC System failure or performance degradation could potentially create opportunities that could be exploited to circumvent system security and prevent or restrict DCC's ability to respond to security threats. This modification aims to prevent DCC system failure and preserve its performance to prevent both these events.
(g) the seventh General SEC Objective is to facilitate the efficient and transparent administration and implementation of this Code.	• In protecting the DCC system in a fair, equitable and transparent way this proposal will facilitate the

Proposers views against the SEC Objectives	
General SEC Objective	Proposer views
	efficient and transparent administration and implementation of this Code.

4. Potential Impacts

The following section sets out the initial assessment of the likely impacts arising from SECMP0030. Additional impacts may be identified by the Working Group during the Refinement Process.

Potential Impacts of SECMP0030	
Smart Energy Code Parties	
Suppliers	All DCC Users will be impacted.
Networks	
Other	
DCC	DCC will be impacted as it will be required to calculate User's allocations and prioritise SRs during periods of high demand.
Systems	
DCC Systems	DCC Systems may be impacted as they will be required to prioritise SRs during periods of high volumes.
User Systems	User Systems may be impacted when lower priority SRs are queued during periods of high volumes of SRs.
Smart Metering Systems	No impacts have been identified at this stage.
Other	No impacts have been identified at this stage.
SEC and Subsidiary Documents	
SEC Sections	SEC Section A (Definition and Interpretations) will be amended to include new definitions. SEC Section H3 (DCC User Interface) will be amended to outline the demand management process and reference changes to DCC User Interface Service (DUIS). SEC Section L8 (SMKI Performance Standards and Demand Management) will be amended to update the provisions for demand management.
Subsidiary Documents	SEC Appendix E (DCC User Interface Services Schedule) may require amendment to reflect the changes proposed by the modification. SEC Appendix AD (DCC User Interface Specification) may require amendment to reflect the proposed priority changes. The SMKI document set may require amendments if response codes inform Users of the proposed DCC demand management processes being deployed. The Proposer has suggested that a new Subsidiary Document may be required to outline the demand management process.

Other Industry Codes and Documents

No impacts have been identified at this stage.

Greenhouse gas emissions

No impacts have been identified at this stage.

Consumers

This modification is expected to have a positive impact on Consumer experience. This is because, if implemented, this modification could prevent DCC System failure due to high demand and would prioritise key services. For example, pre-pay customers may be able to top-up their meters even during periods of peak traffic volumes that could otherwise have prevented Users from sending and receiving messages, prior to the implementation of this modification.

5. Proposed Progression

5.1 Modification Path and the need for refinement

The Proposer and SECAS suggest that this modification be progressed as Path 2 – Authority Determined. This is due to the modification potentially having a material effect on:

- existing or future Energy Consumers (SEC Section D2.6(a));
- competition of the Supply of Energy (SEC Section D2.6(b)); and
- on access to or privacy of Data, on security of the Supply of Energy, and/or on the security of Systems and/or Smart Metering Systems (SEC Section D2.6(c)).

This modification will impact DCC Systems and potentially User Systems (as per the requirements in SEC Section D3.9(c)). Accordingly, this modification will need to undergo refinement by a Working Group to develop and assess the impacts of the changes to the SEC, the DCC Systems, and User Systems, before going to the Modification Report Consultation.

5.2 Indicative Progression Timetable

The following is a high level indicative progression timetable. The detail in this plan is subject to change, however, changes to the overall timetable are subject to a Panel review.

Modification Timetable	
Stage	Date
Modification Proposal Raised	19 th December 2016
Panel initial consideration of the Modification Proposal	13 th January 2017
Refinement Process	January 2017 – July 2017
Modification Report to Panel	August 2017
Change Board vote	October 2017
Authority Decision	November 2017
Implementation	November 2018 (earliest potential implementation date)

5.3 Working Group

The Working Group should be made up of existing Working Group Members who have previously considered Modification Proposals that have an impact on DCC Services and activities, supplemented by other interest SEC Parties. SECAS also recommends that this modification is considered in parallel with SECMP0028¹, as this modification seeks to put in place Service Requests prioritisation as well.

5.4 Working Group Terms of Reference

The complete Terms of Reference for the Working Group is provided in **Attachment C**.

SECAS also recommends that the supplementary matters provided in the below table are considered by the Working Group.

¹ [SECMP0028 'Prioritising Service Requests'](#)

Working Group Terms of Reference – supplementary matters to consider

It is worth noting that Utilita have raised a Modification Proposal (SECMP0028 'Prioritising Service Requests'), which seeks to establish prioritisation ratings for SRs. Therefore, SECAS recommends that SECMP0028 and SECMP0030 are considered in parallel.

Consideration of BEIS' June 2015 approach to demand management.

Consideration of the beneficiary of this modification and who should bear the costs if implemented.

6. SEC Panel Decisions

The SEC Panel:

- **AGREED** for SECMP0028 to progress to the Refinement Process;
- **AGREED** the progression path (Path 2 – Authority Determined) and the progression timetable as outlined in this IMR; and
- **AGREED** the Working Group Terms of Reference and supplementary matters for consideration provided as **Attachment B** and in section 5.4 respectively.

7. Further Information

More information is available in:

- Attachment **A**: SECMP0028 Modification Proposal Form.
- Attachment **B**: Draft Managing Demand Section – 9 June 2015
- Attachment **C**: Working Group Terms of Reference

For further information, please see the [Modification Register](#) page of the SEC website or contact SECAS at secas@gemserv.com.

Appendix 1 – Glossary and References

Glossary		
Acronym	Term	Plain English Summary
DCC	Data and Communications Company	
	DCC Alert	Alert generated in the DCC Total System which is to be sent to a relevant User(s) depending on the alert
DUIS	DCC User Interface Specification	The document sets out mechanisms, formats, protocols, and other technical details necessary for Users to send and receive communications to and from the DCC
	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).
	Path Type	Means the Modification Path to be followed in respect of a Modification Proposal. The type of Path will depend upon the nature of the variation proposed in the Modification Proposal (D2.1, SEC Stage 3.0). The four Modification Paths under the SEC are: • Path 1 Modifications: Authority-led (Section D2.4/D2.5, SEC Stage 3.0) • Path 2 Modifications: Authority Determination (Section D2.6, SEC Stage 3.0) • Path 3 Modifications: Self-Governance (Section D2.7, SEC Stage 3.0) • Path 4 Modifications: Fast-Track Modifications (Section D2.8, SEC Stage 3.0)
	Party Category	Means one of the following categories: (a) the Large Supplier Parties collectively; (b) the Small Supplier Parties collectively; (c) the Electricity Network Parties collectively; (d) the Gas Network Parties collectively; or (e) the Other Sec Parties collectively. (Section A1, SEC Stage 3.0).
SR	Service Requests	A command issued by a DCC User to a device or the DCC.
	Service Response	means, in respect of a Service Request sent by a User, one or more communications in response to that Service Request from the DCC to the User (not being a Pre-Command)
	Alert	has the meaning given to 'Alert' in the GB Companion Specification.