

This document is classified as **White** in accordance with the Panel Information Policy. Information can be shared with the public, and any members may publish the information, subject to copyright.



SECMP0028 'Prioritising System Messages'

Modification Report

Version 0.5

8 November 2022



About this document

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

Contents

1. Summary.....	3
2. Issue.....	3
3. Solutions	4
4. Impacts	5
5. Costs	7
6. Implementation approach	7
7. Assessment of the proposal	8
8. Case for change.....	10
Appendix 1: Progression timetable	11
Appendix 2: Glossary	12

This document also has four 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 collated non-confidential Request for Information (RFI) responses.
- **Annex D** contains the Data Communications Company (DCC) Preliminary Assessment response.

Contact

If you have any questions on this modification, please contact:

Mike Fenn

020 3314 1142

mike.fenn@gemserv.com

1. Summary

This proposal has been raised by Andy Knowles from Utilita Energy.

The Proposer notes that periods of high message volumes going through the DCC Systems will result in message queuing and increased processing times. As a consequence, consumers may be adversely impacted. This is because increased processing times for messages driven by Energy Consumers (prepayment meter top ups, for example) could cause consumers to lose supply unnecessarily or be delayed in regaining supply.

To reduce potential impacts on Energy Consumers, the Proposed Solution would introduce 'priority level' indicators to messages. During periods of high message volumes, were a queue to form, this would result in the Data Service Provider (DSP) System processing higher priority messages first. Among these high priority messages would be those relating to Prepayment top ups and ensuring supply is available for vulnerable consumers.

This modification will impact Large Suppliers, Small Suppliers, Network Parties, the DCC and Other SEC Parties. The estimated cost will be between £350,000 and £750,000. This modification is targeted for the June 2024 SEC Release and will be progressed as a Self-Governance Modification.

2. Issue

What are the current arrangements?

Currently, the DCC are required to process all messages in accordance with the Target Response Times (TRTs) outlined in Smart Energy Code (SEC) Section H3.14 and SEC Appendix E 'DCC User Interface Services Schedule'.

In situations where there are high volumes of messages the DCC System could approach or exceed processing capacity. This could cause DCC Users to experience variations to service performance and delays to TRTs.

Under current arrangements, messages are processed in the order in which they are received in the DCC System and there is no mechanism for prioritising specific messages during high-volume periods. It has also been noted that delays to the processing of consumer-driven Service Requests could cause the User to resend the same message until the desired Response is received, which may further exacerbate the high volume of messages and cause further delays to Response times.

What is the issue?

The Proposer believes that the SEC arrangements have been primarily drafted to cater for credit consumers and do not adequately cater for Prepayment Consumers. The Proposer has highlighted that delays to the processing of consumer-driven Service Requests, for example Service Reference Variant (SRV) 2.2 'Top Up Device', may lead to negative impacts on the consumer experience. This is because this Service Request could action the enabling or disabling of supply for Prepayment consumers.

What is the impact this is having?

In the case of the DCC Systems being overloaded and not processing messages, cost and reputational damage would be caused to Suppliers and to the industry as a whole. While little is known currently about the rate at which these instances occur, consultations conducted with DCC Users and Service Providers as part of the DCC's Network Enhancement Plan concluded that without technical enhancements to mitigate the increases in DCC System traffic, instances of process delays are highly likely to increase.

Impact on consumers

Without prioritisation of consumer-driven messages during periods of high system traffic, and specifically those messages relating to Prepayment top ups, consumers may experience unnecessary outages and delays to their supplies being made live following outages. Depending on the vulnerability of affected consumers, the implications could be severe if not addressed.

3. Solutions

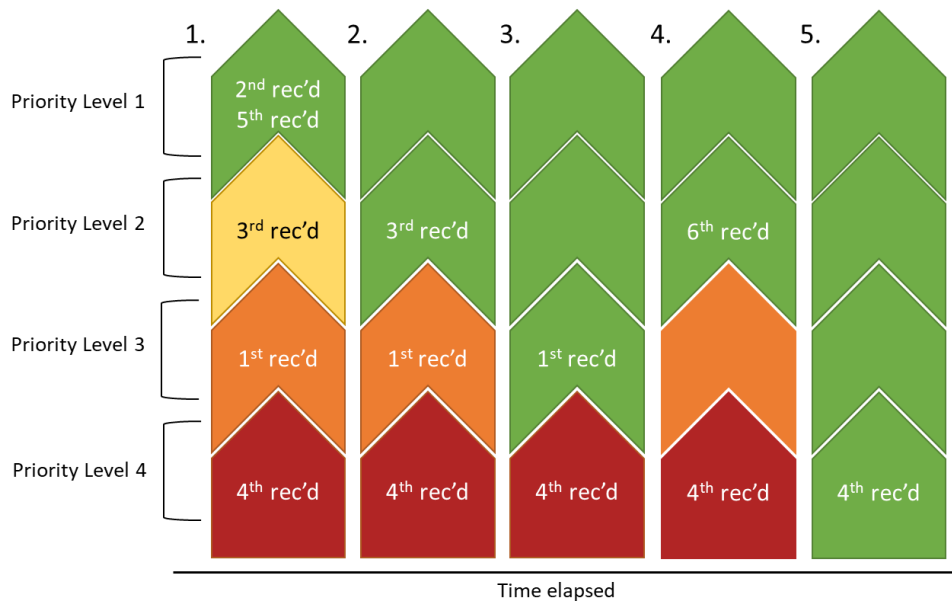
Proposed Solution

The Proposed Solution will be applied to Smart Metering Equipment Technical Specifications (SMETS)1 and SMETS2 Devices.

The Proposed Solution would establish multiple tiers of priority in the DSP aspect of the DCC Systems that can categorise messages depending on the relative importance of processing them quickly. Messages with a 'Priority Level 1' would be fast-tracked in any queues so that they are resolved ahead of any messages with lower priority levels (subsequently higher numbers denoting lower priority). Messages with lower priority levels would still be processed in the order consistent with their assigned levels. The categories that determine the priority levels will be defined and agreed during the Modification Proposal's Refinement Process.

Diagram 1 demonstrates the prioritisation method intended to be delivered by the Proposed Solution:

- Messages will be processed in order of their Priority Level, regardless of the order in which they are received;
- Priority Level 2 messages will be processed once there are no Priority Level 1 messages waiting, and so on for the remaining Priority Levels; and
- newly received messages with a higher Priority Level than the queued messages will be processed ahead of them.



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

This modification is expected to have a positive impact on all SEC Parties that send and receive messages which are processed through the DSP System. In periods of high system traffic, the messages associated with time-sensitive processes will be prioritised, better enabling Service Users to efficiently execute those processes.

DCC System

DCC System impacts are expected to be limited to changes to the application business logic, reuse of extant components (including the Service User Retry Buffer (SURB)) and changes to the format of Alerts.

The technical solution for Northbound message processing will augment the prioritisation established in a previous change, CR1344 'DSP Buffering', such that Northbound messages are treated in one of the following ways:

1. Passed straight to Message Gateway North.
2. Stored in the Motorway cache-based Northbound Message Store (NMS) for priority-based retrieval.
3. Stored in the Oracle-based SURB.

The solution will assign a priority to all Southbound messages to be used when selecting work from queues for onward transmission to the Smart Metering Wide Area Network (SM WAN) and to prioritise delivering responses to Service Users.

Further details on the high-level technical architecture and its impacts on the DCC System can be found in the DCC's Preliminary Assessment in Annex D.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Appendix AD 'DCC User Interface Specification'

The changes to the SEC required to deliver the Proposed Solution can be found in Annex B.

During solution development it was agreed that priority levels should not be defined within the SEC as any subsequent amendments necessitated by changes to business processes would then require a SEC modification to implement.

The Proposed Solution is intended not to interfere with the DCC's existing TRTs defined in SEC Appendix E 'DCC User Interface Services Schedule'. Acknowledgements to this effect and any changes the DCC's reporting will likely be required in the DCC Performance Measurement Methodology (PMM).

These changes will be agreed with the Operations Group following the DCC's full Impact Assessment.

Consumers

This modification is expected to have a positive impact on consumer experience, as it will ensure consumer-driven Service Requests and their subsequent Responses are prioritised during high-volume periods.

Other industry Codes

No impacts have been identified at this stage.

Greenhouse gas emissions

No impacts have been identified at this stage.

5. Costs

DCC costs

The estimated DCC implementation costs to implement this modification are between £350,000 and £750,000. Further detail on costs will be provided following the DCC's completion of a full Impact Assessment.

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

SECAS costs

The estimated SECAS implementation cost to implement this as a stand-alone modification is one days 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

There are not expected to be any additional costs for SEC Parties to implement this modification.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **27 June 2024** (June 2024 SEC Release) if a decision to approve is received on or before 27 June 2023; or
- **7 November 2024** (November 2024 SEC Release) if a decision to approve is received after 27 June 2023 but on or before 7 November 2023.

This approach is based on an estimated implementation lead time of twelve months following approval of the modification. This timeline will be finalised in the DCC's full Impact Assessment.

7. Assessment of the proposal

Observations on the issue

When this modification was initially discussed at the Working Group, it was noted that a method to prioritise messages as part of a wider demand management solution was being considered by [SECMP0030 'Demand Management of DCC Systems'](#). The Proposer and the Working Group members agreed that each Modification Proposal should be progressed with overlapping impacts considered, but not merged as they had separate business cases. The Working Group therefore agreed that this question should be considered further following clarification from the DCC on wider demand matters relating to SECMP0030. This consideration is outlined in the 'Support for Change' section below.

Solution development

Working Group

The original Proposed Solution was to prioritise SRV 2.2 'Top Up Device' and Critical Commands during peak demand scenarios. The Proposer also agreed to include SRV 7.4 'Read Supply Status' in the proposal. SECAS asked the Working Group if they are still in agreement that these SRVs should be included, noting that prioritising Critical Commands could cause complexities where Commands are part of message sequences.

The Working Group agreed that Critical Commands should not be prioritised as part of this modification. Therefore, it was agreed that the scope of this modification is to prioritise SRV 2.2 and SRV 7.4 only.

Discussions followed on whether SRV 6.15 'Update Security Credentials' should be prioritised as part of this modification. It was agreed that prioritising this Service Request would not mitigate any risk to the Consumer experience, and so SRV 6.15 has not been included in the scope.

SECAS asked the Working Group when prioritisation should be utilised. It was agreed that these SRs should be prioritised following a disaster recovery event and when the DCC Systems are experiencing peak bursts in demand. The Working Group also considered what prioritisation means for other Service Requests. It was agreed that SRV 2.2. and SRV 7.4 will be processed first and the remainder of Service Requests should continue to be processed on a "first come, first serve" basis.

During further development of the solution, the Proposer and the DCC agreed to amend the Proposed Solution to include applying prioritisation levels to all messages, based on certain criteria to be agreed with industry Parties during the Refinement Process. When this was discussed with the Working Group, its members noted the difficulties in obtaining agreement on priorities from different Parties and the fact that what is considered a priority at one point in time will not necessarily remain a priority in future. The Working Group noted that a clear business case would be required to justify both the cost of change and the rationale for priority rankings.

Conclusion

Proposed Solution is to sort all messages into priority levels based on urgency.

TABASC

The Technical Architecture and Business Architecture Sub Committee's (TABASC's) view was that the proposed business requirements should be revised to differentiate between the Communication Service Provider (CSP) and DSP components of the DCC System and to ensure the messages were being delivered within the TRTs rather than prioritising specific messages ahead of others. The Proposer agreed to the amendment to place the prioritisation in the DSP and CSP into separate business requirements for the Proposed Solution but believed the focus on TRTs would not resolve the issues in the event of the DCC Systems not being operational and leaving Prepayment Consumers without supply. The Proposer subsequently decided to remove the requirement for prioritisation within the CSP System and focus solely on the DSP System (further details in 'Business Requirements Workshop' section below).

One member echoed this and believed that any prioritisation of Service Requests needs to include prioritising Prepayment top-ups, believing they were among the most crucial of Service Requests that need accepting in the event of a DCC System failure. Another member stated that SRV 7.4 'Read Supply Status' should be prioritised given they use it to ensure their consumer's supplies are restored after an outage. Other members believed there were other valid Service Requests related to ensuring Certificates are correctly placed on meters.

Conclusion

Proposed Solution is to only apply prioritisation to processing in the DSP System.

Business Requirements Workshop

The business requirements were discussed with the Proposer, the DCC and the Service Providers. It was agreed that a core business requirement would be the introduction of a prioritisation mechanism within the DSP infrastructure to allow prioritised Service Requests to move to the front of any queues. The concern was raised that different Party types would have different views on what should be prioritised, which would result in too many types of messages on the prioritisation list.

Attendees noted that even with prioritisation, all messages would be held up if the system went down. It was considered whether any 'fast lane' should have its own dedicated resources or infrastructure to allow priority messages to continue even if the slower lanes became overloaded, e.g. due to an influx of unsolicited messages (such as due to Alert storms, noting a potential link with [MP119 'CH Alert Storm Consolidation'](#)).

In March 2022, SECAS again discussed this modification and its business requirements with the Proposer, the DCC and the Service Providers. It was agreed, due to the associated costs of developing a solution which extended the prioritisation mechanism to the CSP or involved creating standalone infrastructure, that the business requirements would be amended to meet a digital solution for prioritising messages at the DSP level only.

Attendees further agreed that incorporating an 'activation mechanism' was a needless complication, and that priority levels should apply at all times and be easily configurable to future-proof against potential process changes.

Rather than assigning a 'priority' status to certain messages and keeping all others as 'non-priority', attendees agreed that 'priority levels' should be applied to all messages dependent on their categorisation using the following criteria:

Proposed Solution	
Priority Level	Criteria
1	Messages relating to the continuity of a consumer's energy supply.
2	Messages which are required for an engineer to complete on-site activities.
3	Messages with an indirect impact on a consumer's energy supply, and/or messages required to comply with a consumer request.
4	None of the above criteria apply.

The DSP noted that full process pathways should be considered when assigning priority levels, not just standalone messages, as message queueing is a bigger issue when the DSP is sending messages back to the Service User. SECAS and the Proposer agreed. SECAS also agreed to include assigning priority levels to Alerts in discussions on solution development.

8. Case for change

Business case

In the case of the DCC Systems being overloaded and not processing messages, cost and reputational damage would be caused to Suppliers and to the industry as a whole. While little is known currently about the rate at which these instances occur, consultations conducted with DCC Users and Service Providers as part of the DCC's Network Enhancement Plan concluded that without technical enhancements to mitigate the increases in DCC System traffic, instances of process delays are highly likely to increase.

Without prioritisation of consumer-driven messages during periods of high system traffic, and specifically those messages relating to Prepayment top ups, consumers may experience unnecessary outages and delays to their supplies being made live following outages. Depending on the vulnerability of affected consumers, the implications could be severe if not addressed. Prioritisation of commands involved in Install and Commissioning processes could enhance consumer experience and reduce installation times. Distribution of emergency Firmware could also be prioritised as needed, offering security benefits.

Views against the General SEC Objectives

Proposer's views

SEC Objective (a)¹

The Proposer believes this modification better facilitates SEC Objective (a) by ensuring that urgent messages will be processed in a timely manner in the DSP System and reducing the risk of Users further exacerbating high-volume periods by resending the same Service Requests.

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

SEC Objective (c)²

The Proposer believes this modification better facilitates customer experience and energy management by prioritising consumer-driven messages and reducing the risk of Prepayment consumers being off supply unnecessarily.

Industry views

The industry views will be captured and updated following the Refinement Consultation.

Views against the consumer areas

Improved safety and reliability

This modification would have a positive impact on system reliability, as it will prioritise messages which are related to ensuring continuity of supply. It will reduce the likelihood of consumers losing supply unnecessarily or being delayed in regaining supply following an outage.

Lower bills than would otherwise be the case

While this modification would have a neutral impact on lowering consumer bills, it would increase the likelihood of Prepayment transactions being processed on the first attempt and therefore reduce the risk of duplicate payments.

Reduced environmental damage

This modification would have a neutral impact on reducing environmental damage.

Improved quality of service

This modification would have a positive impact on the quality of service, as it would help ensure continuity of supply and timely sending of messages relating to urgent processes.

Benefits for society as a whole

This modification would have a positive impact on society as a whole, as it would promote fairness in the energy consumer market by making provisions for Prepayment consumers.

Appendix 1: Progression timetable

SECAS will issue a Refinement Consultation to seek industry views on the issue and Proposed Solution.

² Facilitate energy consumers management of their use of electricity and gas through the provision of appropriate information via smart metering systems.

Timetable	
Event/Action	Date
Initial Modification Proposal raised	19 Dec 2016
Presented to Panel for progression to Refinement Process	13 Jan 2017
Initial discussion with Working Group	28 Feb 2017
Potential Solutions discussed with Working Group	10 Oct 2017
SECMP0067 rejected	26 Oct 2020
Business Requirements presented to TABASC	4 Mar 2021
Modification discussed at Working Group	7 Apr 2021
Request For Information (RFI) from Industry Parties	16 Aug 2021 – 6 Sep 2021
RFI Responses presented to Working Group	6 Apr 2022
Preliminary Impact Assessment requested	20 Jul 2022
Preliminary Impact Assessment returned	17 Aug 2022
Modification discussed at Working Group	5 Oct 2022
Modification discussed at TABASC	6 Oct 2022
<i>Refinement Consultation</i>	<i>7 Nov 2022 – 25 Nov 2022</i>
<i>Refinement Consultation responses discussed at Working Group</i>	<i>7 Dec 2022</i>
<i>Impact Assessment costs approved by Change Board</i>	<i>21 Dec 2022</i>
<i>Full Impact Assessment requested</i>	<i>22 Dec 2022</i>
<i>Full Impact Assessment returned</i>	<i>22 Feb 2023</i>
<i>Modification discussed at Working Group</i>	<i>5 Apr 2023</i>
<i>Presented to CSC for progression to Report Phase</i>	<i>18 Apr 2023</i>
<i>Modification Report Consultation</i>	<i>19 Apr 2023 – 10 May 2023</i>
<i>Change Board Vote</i>	<i>24 May 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
CSC	Change Sub-Committee
CSP	Communication Service Provider
DCC	Data Communications Company
DSP	Data Service Provider
NMS	Northbound Message Store
RFI	Request For Information
SEC	Smart Energy Code

Glossary	
Acronym	Full term
SECAS	Smart Energy Code Administrator and Secretariat
SM WAN	Smart Metering Wide Area Network
SMETS	Smart Metering Equipment Technical Specifications
SRV	Service Reference Variant
SSI	Self-Service Interface
SURB	Service User Retry Buffer
TABASC	Technical Architecture and Business Architecture Sub Committee
TRT	Target Response Time