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SECMP0028 'Prioritising System Messages'

Modification Report

Version 0.7 (Draft)

25 October 2023

Corporate member of
Plain English Campaign
Committed to clearer
communication

592



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. Solution	4
4. Impacts	6
5. Costs	8
6. Implementation approach	8
7. Assessment of the proposal	9
8. Case for change.....	12
Appendix 1: Progression timetable	14
Appendix 2: Glossary	15

This document also has five 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) Full Impact Assessment response.
- **Annex E** contains the collated Refinement Consultation responses.

Contact

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

Simon Grimwood

020 3923 9758

simon.grimwood@gemserv.com

1. Summary

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

Periods of high message volumes going through the DCC Systems will result in message queuing and increased processing times. Consumers may be adversely impacted by increased processing times for messages driven Consumers (prepayment meter top ups, for example). These could cause consumers to lose supply unnecessarily or be delayed in regaining supply.

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 all SEC Parties. The cost will be £309,879. This modification is targeted for the November 2024 SEC Release and will be progressed as a Self-Governance Modification.

2. Issue

What are the current arrangements?

Currently, the DCC is 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 Target Response Time (TRT).

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 (SRs) 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 wider Smart Metering Implementation Programme (SMIP). 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. Solution

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 (southbound) aspect of the DCC Systems that can categorise messages depending on the relative importance of processing them quickly. The DCC provided the below diagram within the Impact Assessment:

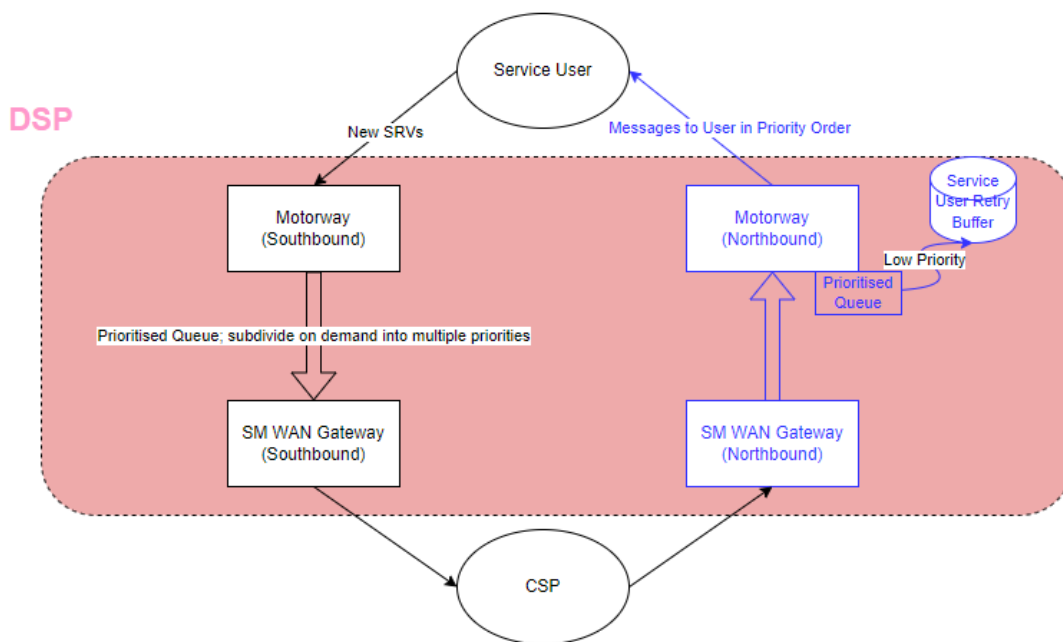


Diagram 1: Proposed Southbound Message Pathway

Messages with a 'Priority Level 1' would essentially 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 will be configurable to future proof the solution and the priority levels will be defined and agreed by the SEC Panel.

Diagram 2 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.

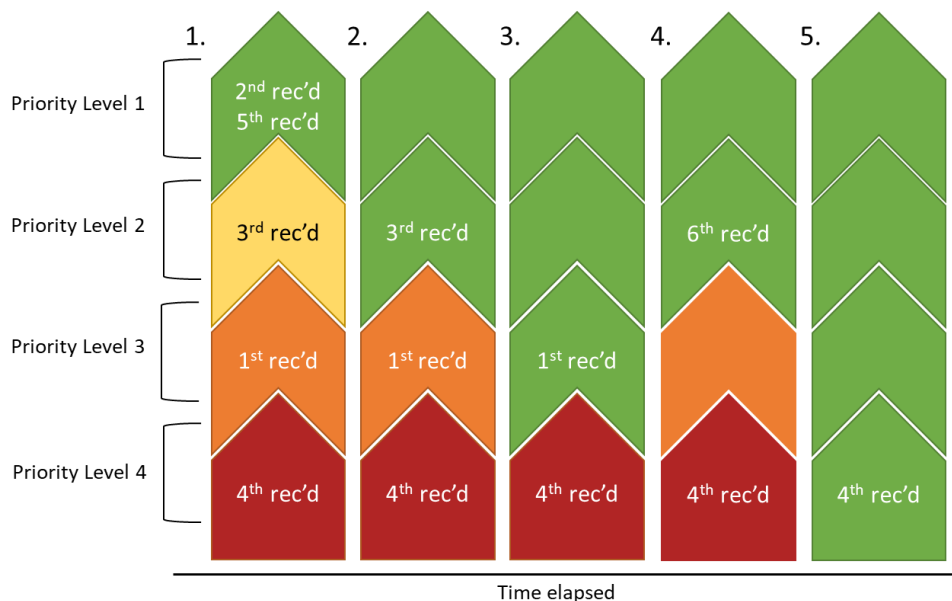


Diagram 2: Proposed Solution pathway

Following the completion of the Refinement Consultation and DCC Full Impact Assessment, a 5th priority level was suggested to support with the processing of future-dated SRVs and SRVs with 24-hour TRTs. The proposed priority levels are outlined below in Diagram 3, and the complete list can be found in the draft legal text within Annex B.

Mode	Category	Priority
On Demand	SRV relating to the continuity of a consumer's energy supply	1
	SRV required for an engineer to complete on-site activities	2
	SRV in list of messages required to comply with a consumer request	3
	Any other SRVs	4
	SRVs with 24-hour TRTs	5
Any other mode	Scheduled	5

Diagram 3: Priority level categories

Messages with priority two - five will be promoted to priority one if capacity is available and the DSP's southbound TRT is close to being breached.

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.

Three respondents to the Refinement Consultation identified there will be an impact to their respective organisation because of implementing SECMP0028. The comments provided were in relation to feedback received from previous questions about priority definitions. There was concern as to how their operational business processes would be impacted by the assigned priority levels, as this may cause additional work or put stress on their internal systems.

DCC System

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 technical architecture and its impacts on the DCC System can be found in the DCC's Full Impact Assessment in Annex D.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Appendix AB 'Service Request Processing Document'.

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

Devices

There will be no impact to Device behaviour from this modification.

Consumers

This modification is expected to have a positive impact on consumer experience, as it will ensure consumer-driven SRs and their subsequent Responses are prioritised during high-volume periods. All respondents to the Refinement Consultation felt that consumers would be positively impacted and would benefit if this modification was implemented.

Other industry Codes

There will be no impacts to other Codes from this modification.

Greenhouse gas emissions

There will be no impacts to Greenhouse gas emissions from this modification.

5. Costs

DCC costs

The DCC implementation costs to implement this modification is £309,879. The breakdown of these costs are as follows:

Breakdown of DCC implementation costs	
Activity	Cost
Design, Build and Pre-Integration Testing (PIT)	£305,381
Systems Integration Testing (SIT)	£0
User Integration Testing (UIT)	£0
Implement to Live	£1,032
Application Support	£3,466

There will be no SIT or UIT as part of the implementation as the changes are solely within the DSP system. More information can be found in the DCC Full Impact 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

One respondent assessed they would incur a cost of £100k-£250k depending on the definition and application of priority levels, and the landscape of the legal text. It was noted however that specifics and details relating to estimated costs would not be accurate until a formal solution was presented. The DCC Full Impact Assessment shows that there should be no impacts to User systems as the DSP changes are all contained within their system. Therefore, 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:

- **07 Nov 2024** (November 2024 SEC Release) if a decision to approve is received on or before 20 Dec 2023; or
- **27 June 2025** (June 2025 SEC Release) if a decision to approve is received after 20 Dec 2023 but on or before 21 Aug 2024.

This approach is based on an estimated implementation lead time of ten months following approval of the modification. The draft legal text will be placed in Appendix AB 'Service Request Processing Document' and there will be no impact on Appendix AD 'DCC User Interface Specification' (DUIS) therefore the November Release can be targeted.

Currently there are no other system impacting modifications targeted for November 2024 and therefore it may not be cost effective to target this Release. Views on this will be gained via the Working Group.

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. SECMP0030 was subsequently withdrawn.

Solution development

Data Service Provider system

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. The Proposer agreed to the amendment to place the prioritisation in the DSP and CSP into separate business requirements for the Proposed Solution

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.

Conclusion

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

Which Service Requests should be prioritised?

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 at that time 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.

A TABASC member felt that prioritisation should ensure the messages were being delivered within the TRTs rather than prioritising specific messages ahead of others. The Proposer 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.

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.

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.

Northbound prioritisation

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 to include assigning priority levels to Alerts in discussions on solution development.

However, in November 2023 the DCC delivered Northbound prioritisation processing outside of a modification. Changes for prioritisation of northbound messages (Responses and Alerts) have now been implemented as part of the development of [MP208 'Northbound Prioritisation of N56 Alerts'](#) and delivered under the heading of Market Wide Half-Hourly Settlement. Therefore, Northbound processing, (as shown in blue in Diagram 1 within Section 3) shall remain unchanged.

Conclusion

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

Priority levels

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'](#)).

Attendees further agreed that incorporating an 'activation mechanism' was a needless complication, and that priority levels should always apply 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.

Respondents to the Refinement Consultation gave feedback in relation to that of the priority level definitions. One respondent indicated they felt the wording suggested amongst each priority level could allow for messages to waiver across each level, leaving this open to interpretation. As a result of this feedback, amendments were made to the definitions of each priority level (as defined in Diagram 2), and several messages had their proposed priority levels re-assigned.

As part of this resolution and the DCC Full Impact Assessment, the following headings for each category has been suggested:

Mode	Category	Priority
On Demand	SRV relating to the continuity of a consumer's energy supply	1
	SRV required for an engineer to complete on-site activities	2
	SRV in list of messages required to comply with a consumer request	3
	Any other SRVs	4
	SRVs with 24-hour TRTs	5
Any other mode	Scheduled	5

These, along with the full list of priority levels for each Service Request will be shared with the Working Group, TABASC and OPSG for comment.

Draft legal text

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. Initial legal text drafts had

included changes within DUIS. Respondents to the Refinement Consultation provided mixed responses as to whether this was the most appropriate place for the changes.

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. Therefore, it is suggested that the agreed priority levels be detailed in a Code Required Document, and the governance process for agreeing changes be detailed in the SEC.

Subsequent drafting has placed the details within the pre-existing document Traffic Management Mechanism, and included the governance process for implementing, changing, and agreeing any classifications under Section AB 'Service Request Processing Document'.

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 to the DCC's reporting will likely be required in the DCC Performance Measurement Methodology (PMM).

This will be discussed in the Working Group and with the Operations Group following the DCC's full Impact Assessment.

DCC capacity and traffic management

Various respondents to the Refinement Consultation highlighted their concerns in relation to periods of high-volume traffic on the DCC system. Queries in relation to flexing the capacity of the System during different periods of demand were made, as well as queries relating to times of the week a request may be made.

Suggestions were made in relation to assigning a proportion of processing capacity from a DCC perspective to the priority levels so as to support the processing of all message types including through periods of high demand.

SECAS reviewed the responses and made amendments were necessary to the proposed solution.

Respondents to the Refinement Consultation noted impacts felt from an operational standpoint in relation to consumer engagement, and the inability to drive core business processes when the DCC system is impacted and caused to be offline. They noted traffic management could help reduce these instances.

Another respondent highlighted the need not just for a prioritisation process, but also that of sufficient system capacity to support the change. The respondent felt there may be the possibility of unintended consequences in relation to SRs, security credentials and priorities during periods of high demand.

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. 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 and (c)²

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.

The Proposer believes this modification better facilitates SEC Objective (c) by prioritising consumer-driven messages and reducing the risk of Prepayment consumers being off supply unnecessarily.

Industry views

The majority of respondents felt that the modification would better facilitate the General SEC Objectives. It was noted that if priority levels were correctly established and the prioritisation mechanism was agreed by the relevant Sub-Committees then Objectives (a) and (c) would be better supported.

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.

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

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

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 neutral impact on benefits for society as whole.

Appendix 1: Progression timetable

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
Refinement Consultation	7 Nov 2022 – 28 Nov 2022
Refinement Consultation responses discussed at Working Group	1 Mar 2023
Impact Assessment costs approved by Change Board	23 Aug 2023
Full Impact Assessment requested	23 Aug 2023
Full Impact Assessment returned	13 Oct 2023
<i>Modification discussed at Working Group</i>	<i>1 Nov 2023</i>
<i>Modification discussed at TABASC</i>	<i>2 Nov 2023</i>
<i>Modification discussed at OPSG</i>	<i>14 Nov 2023</i>
<i>Presented to CSC for progression to Report Phase</i>	<i>21 Nov 2023</i>
<i>Modification Report Consultation</i>	<i>22 Nov 2023 – 13 Dec 2023</i>
<i>Change Board Vote</i>	<i>Dec 2024</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
DUIS	DCC User Interface Specification
NMS	Northbound Message Store
RFI	Request For Information
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SM WAN	Smart Metering Wide Area Network
SMETS	Smart Metering Equipment Technical Specifications
SMIP	Smart Metering Implementation Programme
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