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MP102B

‘Power Outage Alerts triggered by an OTA firmware upgrade – enduring solution’

Modification Report

Version 1.0

19 July 2022

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communication

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About this document

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

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This document also has 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 Data Communications Company (DCC) Impact Assessment response.
- **Annex D** contains the full responses received to the Refinement Consultation.

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1. Summary

This proposal was raised by Matthew Alexander from Scottish and Southern Electricity Networks (SSEN).

Power Outage Alerts (POAs) are used by Distribution Network Operators (DNOs) to improve customer service by becoming aware of power outages sooner rather than relying on their customers to contact them. POAs enable the DNO to restore supply to affected consumers more efficiently and more quickly.

Over the Air (OTA) firmware updates can cause Electricity Smart Metering Equipment (ESME) to generate a POA. The DNO is unable to tell whether there is a real issue with the power to the premises or whether it the POA was generated as a result of a firmware upgrade to the ESME.

An informal agreement was put in place to prevent OTA firmware upgrades from causing POAs from being generated. However, this agreement is an interim solution, and a new ESME Manufacturer may be unaware of or may not comply with such an agreement. This modification is to implement an enduring obligation.

Furthermore, ESME already installed will continue to initiate a POA when an OTA firmware update is implemented. This cannot be rectified retrospectively and therefore would need a central System solution or physical Device exchange.

Investigations during the Refinement Process found the scale of the issue affecting existing meters was much greater than initially envisaged. SEC Parties agreed that there should be two separate solutions (listed below) to address the issue:

- [MP102A 'Power Outage Alerts triggered by an OTA firmware upgrade'](#): a Technical Specifications document change for meter Manufacturers to abide by for ESME produced after implementation (implemented as part of the November 2020 SEC Release); and
- MP102B: an enduring central System solution for meters that are currently installed.

The Proposed Solution is for the Data Service Provider (DSP) to build a mechanism that will suppress POAs which may have been caused by a firmware update to L+G ESME Devices. The DSP will track firmware activations on tracked L+G ESME which are present on the L+G Global Unique Identifier (GUID) list of Devices known to potentially cause the issue and then suppress POAs from the L+G ESME for 30 minutes. The solution also caters for future-dated firmware updates.

This modification has a targeted implementation date of 29 June 2023 (June 2023 SEC Release). This modification will impact Electricity Network Parties and the DCC. The DCC Impact Assessment states that the modification will cost £197,524 to implement, with a seven-month lead time. This modification is being progressed as a Self-Governance Modification.

2. Issue

What are the current arrangements?

POAs are intended to notify DNOs when the power supply to a consumer's premises fails for a period greater than three minutes. POAs are used by DNOs to improve customer service by becoming

aware of power outages sooner rather than relying on the customer to contact the DNO. This way DNOs can develop a faster, more complete view of the premises affected and hence enable them to restore supply to affected customers more efficiently and more quickly.

Electricity Distributors have an obligation under Statutory Instrument 2002 No. 2665 'The Electricity Safety, Quality and Continuity Regulations 2002 (as amended)' to have and use distribution equipment in such a way so as to prevent interruption of supply to Customers' premises, so far as is reasonably practicable. Hence there is a legal obligation to maintain supplies to consumers.

Electricity Distributors have a further obligation under Statutory Instrument 20015 No. 699 'The Electricity (Standards of Performance) Regulations' to pay consumers a prescribed sum of money where the supply to a consumer's premise is interrupted as a result of a fault on their network which is not restored in a prescribed period of time. There is therefore a need for the Electricity Distributors to know when a consumer's supply is interrupted so that they can respond appropriately. Failure to respond and restore supplies within the prescribed time will have an adverse impact on customer service and create an obligation to pay customers compensation.

In order to achieve this, a DNO needs to be confident that the POAs it receives are genuine and actually relate to supply interruptions to customers' premises.

What is the issue?

Experience has shown that activating an OTA firmware update on some types of ESME generates a POA. This is because when these ESME activate a new firmware version it results in an interruption of the power supply to the Communications Hub (power to the Communications Hub is supplied by the ESME). If the power supply to the Communications Hub is interrupted for more than three minutes, then the Communications Hub must send a POA (the AD1 Alert).

The DCC then forwards the AD1 Alert to the relevant DNO, who cannot verify whether there is a real issue with the power to the premises or whether the outage occurred due to a firmware upgrade to the ESME. As DNOs need to respond to each POA as per their business processes, a POA initiated by an OTA firmware update will require a DNO to respond in the same manner as if it were a genuine power outage.

This issue was previously highlighted in industry forums where current ESME Manufacturers agreed that all future OTA firmware updates would be designed so as not to initiate a POA event (the ESME must not cut the Communications Hub power supply for three or more minutes during a firmware upgrade to prevent the Communications Hub from sending the AD1). However, this agreement should be seen as being an interim solution until an enduring obligation is implemented through this modification. A new ESME Manufacturer may be unaware or may not comply with such an agreement.

Furthermore, there is a set of ESME that will power down for three minutes or more, and thus continue to initiate a POA when an OTA firmware update is implemented. This issue cannot be resolved retrospectively for the ESME already installed. These Devices will continue to generate a POA upon OTA firmware update activations for the duration of their life. There is currently no solution that can stop POAs from being forwarded to the relevant DNO unnecessarily.

In summary there are two issues:

1. There is no obligation in the Smart Energy Code (SEC) to require an OTA firmware update not to generate a POA. This was addressed through SEC Modification MP102A.

2. There is no means of identifying or suppressing erroneous POAs associated with an OTA firmware update from the high number of ESME in service where this issue can't be addressed.

Depending on the location of the faulty equipment, Electricity Distributors have several means of detecting the interruption of supply to a consumer's premise, the AD1 Alert being one of them. The RIIIO-ED1 regulatory instructions and guidance (RIGs) Annex F 'Interruptions' form part of the Electricity Distributors' licence obligations. These state that the Electricity Distributor need not respond on receipt of a single AD1 Alert, but that there is a clear expectation that when the AD1 Alerts become more reliable the RIGs will be changed accordingly. When the RIGs are changed Electricity Distributors will need to respond to an AD1 Alert and it is therefore essential that the AD1 Alerts are as reliable as possible. False or spurious AD1 Alerts are likely to initiate an unnecessary customer contact either by phone or a site visit, which will increase costs, ultimately borne by consumers, and increase inconvenience for customers as well as having an adverse impact on customer service.

How does this issue relate to the SEC?

Currently there is no mechanism to suppress POAs from being generated incorrectly when an OTA firmware update is processed by a Device that cannot be modified to inhibit their creation. Furthermore, the SEC does not specify how long a Device should power down and reboot for following a firmware update, which has led to this issue of non-genuine POAs being generated.

What is the impact this is having?

As DNOs need to respond to each POA, the issue of a POA initiated by an OTA upgrade will require a DNO to put in place systems to check every POA to establish whether it relates to a genuine power outage. This could require the DNO to develop and implement systems that would automatically check the energisation status of each meter from which POA is received to confirm that the POA is genuine, or in the extreme cases, send a member of staff to site to investigate the reported POA.

What is the impact of doing nothing?

There are two significant impacts if this issue is not addressed:

- DNOs will either need to check the energisation status of each meter from which a POA is received, or
- DNOs will need to send a member of staff to site to investigate.

Both these options will result in the DNO incurring additional costs and consumer inconvenience.

Scale of the issue

During the Development Stage, the Smart Energy Code Administrator and Secretariat (SECAS) was made aware of two Device Manufacturers that had built Devices that caused POAs to be generated when an OTA firmware upgrade takes place.

Landis and Gyr (L+G) advised that it had built approximately 1.4m ESME that can potentially take longer than three minutes to resume normal operation following the firmware activation. This is due to the ESME design. It was not envisaged that this would cause a problem with POAs.

The second Device Manufacturer, Aclara, has approximately 1,400 ESME currently installed that can cause the issue. SECAS liaised with the manufacturer to better understand the impact of the issue moving forwards. Aclara stated that this was an issue that affected the first generation of its hardware (Certified Products List (CPL) model code 00000000). It commented that later revisions of the Smart Metering Equipment Technical Specifications (SMETS) are possible on this particular model. This model would no longer be subject to firmware upgrades and as such would not cause the issue. The Aclara Devices are therefore out of scope.

Impact on consumers

Erroneous POAs may result in the DNO contacting the consumer via telephone or carrying out a site visit, causing inconvenience.

3. Solution

Proposed Solution

The Proposed Solution is for the DSP to build a mechanism that will suppress POAs which may have been caused by a firmware update to L+G ESME Devices.

The DSP will track firmware activations on tracked L+G ESME which are present on the L+G GUID list of Devices known to cause the issue and then suppress POAs from the L+G ESME for 30 minutes. L+G has advised that from the point the firmware activation starts, the ESME takes 12-15 minutes to complete the upgrade. For the impacted Devices, the power would be cut to the Communications Hub during that 12-15-minute period. L+G added that 30 minutes is a reasonable number to adopt as this would allow for any outliers and any scenarios where the meter clock was a few minutes out of sync on a scheduled activation.

In instances where a User may future date a firmware activation request, the DSP will track the execution time specified within the SR 11.3 'Name' firmware activation request as the firmware activation time. If a POA is received from the Communications Hub on the same Home Area Network (HAN) as that ESME within 30 minutes of the recorded firmware activation time, then the DSP will suppress the AD1 Alert.

The solution requires the DSP to build a mechanism to store the GUID list of the applicable Devices. The incorporation of the GUID list eliminates the need to track firmware activation of Devices that work as desired. As a result, the memory needed to hold the tracking data for all L+G Devices will be reduced. However, the DSP has advised that the GUID List will require allocation of additional memory.

This solution was chosen by the Proposer following a review of the Refinement Consultation responses. This solution is referred to as the 'DSP Enhanced Solution' in the DCC Preliminary and Impact Assessments in Annexes C and E.

The business requirements used to develop this solution can be found in Annex A.

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

Electricity Network Operators will be impacted by this modification as they will no longer receive POAs from Devices that have been generated because of an OTA firmware upgrade.

Suppliers are also impacted by this modification as they also receive AD1 Alerts from Devices

The DCC will be impacted by this modification as POAs generated by L+G Devices following OTA firmware upgrades require suppression to prevent them from reaching the relevant Electricity Network Operator.

It is worth noting that as a Device Manufacturer, L+G will not be impacted by this modification as the modification will not result in any Device behavioural change.

DCC System

The DCC advised that in southbound processing, Request Management will build a tracking mechanism that involves recording the firmware activation time for any on demand or future dated firmware activation Service Requests sent to the relevant L+G ESME Devices.

In northbound processing, Request Management will not create an AD1 Alert for a POA that is received within 30 minutes of a firmware activation on a tracked L+G ESME Device. The details of the suppressed AD1 Alerts will be recorded within the 'Power Outage Suppression Log'.

Request Management will also need to build housekeeping functionality to manage the firmware activation tracking data.

When comparing the two potential solution options (DSP 'Core' and 'Enhanced' solutions), the DCC stated in the Preliminary Assessment that there will be no change to the infrastructure design because of this modification. Additional processing and storage will be required, but this will not be significant enough to warrant the procurement of additional computing power or storage. The DSP reserves the right to raise a Change Request for the provision of additional infrastructure should the DCC Data System experience performance problems that are the direct result of this modification. Any additional cost would be included within the Change Request and not under this modification.

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

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Section F 'Smart Metering System Requirements'

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

Technical specification versions

Although the DSP will build a mechanism to deliver the Proposed Solution, there will be no impact on the SEC Technical Specifications.

Devices

This modification will not impact Device behaviour.

Consumers

This modification will ensure DNOs are aware when there is a genuine Power Outage and enable consumers to be reconnected quickly. It will also ensure the DNOs do not have to visit consumers' properties to check they have supply.

Other industry Codes

This modification will have no impact on other industry Codes.

Greenhouse gas emissions

This modification will have a positive impact on greenhouse gas emissions, as addressing the issue will result in fewer site visits being made. This will reduce a DNO's level of pollution into the atmosphere.

5. Costs

DCC costs

The DCC implementation costs to implement this modification is £197,524. The breakdown of these costs are as follows:

Breakdown of DCC implementation costs	
Activity	Cost
Design, Build and Pre-Integration Testing (PIT)	£144,252
Systems Integration Testing (SIT)	£44,304
User Integration Testing (UIT)	N/A
Implement to Live	£8,968
Application Support	£1,722 per month

The DCC Impact Assessment states that there will be 'Application Support' costs of £1,722 per month in anticipation of additional call volumes as a result of the implemented solution. The DCC has advised that these costs should be viewed as business as usual and are outside of this modification. The DCC also stated that these costs will not apply if there is not an increase in call volumes.

More information can be found in the DCC Impact Assessment response in Annex E.

SECAS costs

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

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

SEC Party costs

Most Refinement Consultation respondents stated that they will not incur any costs because of this modification. One Network Party stated that it may incur costs due to potential changes to its systems, however the costs will not outweigh the benefit of the modification. No actual figures were provided.

6. Implementation approach

Agreed implementation approach

The Change Sub-Committee (CSC) agreed an implementation date of:

- **29 June 2023** (June 2023 SEC Release) if a decision to approve is received on or before 27 October 2022; or

- **2 November 2023** (November 2024 SEC Release) if a decision to approve is received after 2 November 2022 but on or before 2 February 2023.

Provided this modification is approved in time, it will be included in the June 2023 SEC Release. If a decision is reached after 29 June 2022, the modification will be implemented as part of the November 2023 SEC Release. The rationale behind this implementation approach is to allow sufficient time for DCC to facilitate the required level of testing.

During the Refinement Process, Network Parties advised that if approved, the modification should be implemented as soon as possible. Parties also indicated that they would not require any lead time to implement this modification.

7. Assessment of the proposal

Observations on the issue

The CSC discussed the issue and a DNO representative stated that the issue only relates to SMETS2 Devices and is limited to two Manufacturers.

SECAS engaged with meter Manufacturers to understand the magnitude of the issue. The meter Manufacturer L+G stated that approximately 1.4m of its meters are affected by this issue. L+G also informed SECAS that it was undertaking a project to list all the GUIDs of affected meters. Checking this list against its meter list would enable it to establish where an OTA firmware upgrade would generate spurious AD1 Alerts.

The meter Manufacturer Aclara also stated that it had built Devices that could cause this issue, though in much smaller numbers (1,400). SECAS further investigated this with the Manufacturer, who commented that the 1,400 Devices would no longer be subject to firmware upgrades and as such would not cause the issue. During the Refinement Process, the Proposer and the Working Group noted this information and agreed that the Aclara Devices would be out of scope.

Solution Development

Further investigations around the scale of the issue

A Working Group member commented that the initial estimate of 500,000 affected ESME was a substantial under-estimate. SECAS informed the Working Group of the discussions noted above, where L+G had identified 1.4m ESME affected by the issue. A Working Group member confirmed that other work they had been undertaking with the DCC should provide the results required. The DCC confirmed that it would share its findings for the benefit of the modification.

The affected meter Manufacturer confirmed that approximately 1.4m meters had been produced that could result in an AD1 Alert being generated by the Communications Hub. However, the DCC testing had only identified an approximate 14,000 meters which were causing the issue. Several Network Party members questioned the accuracy of the DCC's results, stating that there had been instances where AD1 Alerts had been lost. A Working Group member stated that they had experienced three to five thousand cases where they had received a Power Restoration Alert but not an AD1 Alert. For this reason, the Working Group was not confident that the DCC figure of 14,000 affected Devices was accurate.

The DCC IT Interaction Group (DIG) questioned the testing that had taken place that identified only 14,000 meters as it felt that this reduced the business case of the modification. SECAS held a teleconference between the Proposer, L+G, and Network Parties to allow the Network Parties to better understand the testing constraints of the meter Manufacturer and the DCC and the mismatch in figures.

L+G noted that the production of an AD1 Alert on OTA update by all 1.4m meters cannot be ruled out even though the vast majority were not identified during testing. This is due to the flash memory in meters deteriorating over time and the frequency of use meaning they were more likely to produce Alerts as they aged. This has been proven in test laboratories where meters are subject to extensive use. It is known that as the meter ages, it takes longer to reboot. The issue could also worsen when a firmware update reaches the upper size limit of 750kb. L+G further advised that for its meters to be upgraded to Electricity Smart Metering Equipment Technical Specifications 2 (ESMETS2) v4.2, there will be two firmware updates to upgrade the meters.

Identifying the impacted ESME

SECAS worked with L+G to identify the 1.4m ESME that can cause the issue. SECAS first explored using the CPL by filtering to specific Device models. This would be the most efficient way of addressing the issue, as any AD1 generated from a particular Device model could be suppressed by the DSP. Unfortunately, L+G informed SECAS that the bootloader specification known to cause the issue was implemented across different Device models, which since installed would also be on varying firmware versions. L+G advised that due to the varying hardware and firmware versions, this would not be a viable option.

SECAS also investigated the possible use of meter commission dates. However, L+G commented that the introduction of the bootloader was extremely difficult to pinpoint, due to multiple manufacturing sites and the Manufacturer building Devices for multiple customers and their subsequent individual firmware versions. Furthermore, some Devices may have been warehoused following manufacture. Media Access Control (MAC) addresses were also explored under this option; however, this was ruled out as they do not follow on sequentially.

Following these conversations, SECAS, the Proposer and L+G agreed that the best way to confidently identify the Devices causing the issue was to use the original GUID list in an agreed format. The DSP will use this list to suppress AD1 Alerts from these Devices, following an OTA firmware update activation.

The DCC queried whether this list would be subject to change or would remain static. Due to the implementation of MP102A, ESME will no longer follow reboot procedures exceeding three minutes, and L+G had previously identified and resolved the problem moving forwards. The DCC and the DSP saw no negative impact of the list remaining in place despite the number of ESME expected to reduce (due to physical replacements over time).

SECAS advised that due to the anticipated additional processing for the DSP, it was DNOs' intention to have a solution investigated where POAs would be suppressed following an OTA firmware activation for all ESME. SECAS sought to clarify that this was in fact for all L+G ESME. It was agreed that the business requirements would be amended accordingly. The Proposer confirmed that they were comfortable with the possibility of suppressing genuine POAs during the 30-minute period.

Validation of AD1s

During the Refinement Process, SECAS presented the modification to the Technical Architecture and Business Architecture Sub-Committee (TABASC). TABASC members questioned the business case for the modification, asking SECAS whether a process of validation can be used before an engineer is sent to site to confirm whether the site does or does not have an energy supply. This could be done through sending Service Request (SR) 7.4 'Read Supply Status'. The Proposer felt that this would be unreasonable as this process of validation would have to be carried out for every POA that they receive as DNOs have no visibility of when firmware upgrades occur.

SECAS further investigated the TABASC's suggestion and identified that any Service Request could be sent to check power supply, not exclusively SR7.4. The Communications Hub will lose power and will not be able to process any SR and so a DCC error message should be sent back to the DNO. If a response is received from the Communications Hub, then the DNO knows that power has been restored to the Communications Hub.

The Proposer advised that this would create additional traffic across the DCC System. Additionally, this would leave DNOs in a position where they would have to build in processes and functionality into each of their adapters or other systems to send a SR7.4 for every outage Alert received. The Proposer advised that if this was implemented, there is a large percentage of SR7.4 failures after an OTA although there is an uninterrupted supply to the property so this will not assist in resolving the issue. Furthermore, this would impact SEC Modification [MP096 'DNO Power Outage Alerts'](#) which looks specifically at the timeliness of the delivery of POAs and PRAs. They noted this is why a modification to suppress the spurious Alerts is required.

Futured dated firmware activations

An issue was raised where the validity of the solution could be jeopardised by future dated firmware activations. This adds extra complexity as the Target Response Time for future dated activations is 24 hours as opposed to 60 seconds for on demand activations. This would make the DSP's task of suppressing erroneous POAs more complex. The DCC advised that to resolve this issue, there may need to be changes at a Communications Service Provider (CSP) level.

The DCC analysed Technical Operations Centre (TOC) information to ascertain what percentage of firmware activations on L+G were future dated. The data spanned from 2019 to July 2021, and showed that approximately 13% of firmware activations on L+G ESME were future dated. The data also showed a gradual increase in future dating by Suppliers from January 2021.

The business requirements were subsequently updated to incorporate requirements that addressed the issue of future dated firmware activations. The Working Group was happy with the progress made, and advised that a request for information (RFI) should be issued to better understand Supplier firmware activation processes.

Three responses were received to the RFI, all from Large Suppliers. One respondent stated that they future date firmware activations as well as action them on demand. The other two responses only action firmware updates on demand. The two respondents stated that they did not anticipate using the future dating capability in the future.

The DCC investigated future dated firmware activations further, specifically on L+G ESME. The DCC found that overall, 13.55% of firmware activation commands sent to L+G ESMEs since the beginning of 2019 were future dated. It also reviewed data pre- and post-COVID-19 to mitigate any COVID-19-specific effects. The DCC concluded that there has been a trend towards the use of future dated

commands during 2021. The Proposer agreed that the percentage was material enough to be considered when developing the solution.

Power Restoration Alerts and Reporting

When discussing the business requirements, a DNO representative queried what impact suppressed POAs will have on unsuppressed Power Restoration Alerts (PRAs). All DNOs receive a monthly report which sets out eight different outage scenarios and how many outages occurred for each scenario. They were concerned that the solution would skew these reports. The Proposer acknowledged that this is something to be investigated through DCC reporting. The DCC advised that these reports are either produced from the DCC TOC or directly from the DSP.

The DCC stated that the reports that the DCC TOC produces for DNOs currently try to correlate Power Outage Events (AD1 Alerts) reported by a Communications Hub with Power Restoration Alerts (8F35 and/or 8F36 Alerts) sent by the ESME at around the same time. This takes into consideration that the clocks on the two Devices may not be synchronised so the Alerts may appear to be out of sequence. By reporting on this, DNOs can see how many AD1 Alerts do not appear to have corresponding 8F35/8F36 Alerts and vice versa. The DCC flagged that this method is not 100% accurate.

The DCC added that by implementing MP102B, the accuracy of these reports could increase without needing to make any changes to the reports themselves. This is because there will be an absence of spurious AD1 Alerts together with an absence of any PRAs (which are not generated during firmware activation) on the same Smart Metering System. This will mean that the DCC will cease to report the (now suppressed) AD1 Alerts to the DNOs as being uncorrelated.

Power Outage Suppression Log

The DCC noted in the Preliminary Assessment that the DSP will build a Power Outage Suppression Log to record instances where the solution is used. The DNO representatives commented that they would like to receive a report of this log as part of what they currently receive relating to outage reporting. The DCC added that one report would be generated for all Meter Point Administration Numbers (MPANs), regardless of DNO region. A DNO representative questioned whether generating one report may have competition or regulatory implications. After investigating, the DCC does not anticipate a regulatory blocker to sharing a consolidated Power Outage Suppression Log with all DNOs.

In terms of the implementation, the DCC advised it may be preferable to incorporate the Power Outage Suppression Log data into the TOC reports. This will result in some additional development effort for the TOC but has the benefit of keeping all power outage reporting in one place and being specific to each recipient DNO. The Working Group was happy with this approach.

Refinement of the Proposed Solution

When issuing the Refinement Consultation, SECAS consulted on two potential solutions:

- **Proposed solution / DSP Core Solution:** DSP to build a mechanism that will suppress POAs following a firmware update for all L+G ESME Devices for 30 minutes.

- **Alternative solution / DSP Enhanced Solution:** DSP to build a mechanism that will suppress POAs following a firmware update for a specific set of L+G ESME Devices known to cause the issue for 30 minutes.

The Proposer stated that they would decide on which solution they would take forward upon review of the Refinement Consultation responses.

SECAS received four responses to the Refinement Consultation, including the Proposer's organisation SSEN. The other respondents unanimously preferred the alternative option that will only track firmware activation requests for Devices which are present on the L+G GUID list (approximately 1.4m ESME). Their rationale stated that this would prevent genuine POAs being suppressed during the 30-minute period. The Proposer subsequently agreed to take this forward as the Proposed Solution, and the original proposed solution was subsequently discarded.

8. Case for change

Business case

The implementation of MP102B will eliminate virtually all spurious AD1 Alerts following an OTA as they will be filtered by the DSP. If an AD1 is then received by the DNO it will have to follow its own business process for handling what is perceived as a genuine outage.

During the Refinement Process SECAS worked with the Proposer to understand the financial impact of not addressing the issue. The May 2022 [MP122A 'Operational Metrics'](#) report was analysed, and in particular the month's volume of AD1s generated. The Proposer estimated that approximately 17,000 AD1s a month would relate to an OTA firmware upgrade. Multiplied with an average site visit cost of £80 resulted in a rough order of magnitude (ROM) cost of £1,369,040. SECAS confirmed that this monthly cost is across all DNOs and regions.

Views against the General SEC Objectives

Proposer's views

The Proposer believes this modification would better facilitate SEC Objective (a)¹. Reducing the non-genuine AD1 Alerts will better facilitate the efficient operation and interoperability of smart metering systems at energy Consumers' premises within Great Britain.

Industry views

Refinement Consultation respondents agreed that this modification better facilitates SEC Objective (a) as it will remove the need for additional activity or traffic on the smart meter communications system that would be associated with additional Service Requests to ascertain the status of the supply at a consumer's premises. There will also be a reduction in DNOs having to contact the consumer via

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

telephone (with the associated cost and use of valuable resource) to understand the situation. The Proposed Solution will also reduce the likelihood of site visits because of the issue identified.

Views against the consumer areas

Improved safety and reliability

This modification will have a positive impact on safety and reliability, as DNOs will have better visibility of genuine power outages, as erroneous POAs will be mitigated because of the solution.

Lower bills than would otherwise be the case

This modification will have a neutral impact on the price of bills.

Reduced environmental damage

This modification will have a neutral impact on environmental damage.

Improved quality of service

This modification will have a positive impact on quality of services as DNOs will be able to identify genuine power outages and respond accordingly.

Benefits for society as a whole

This modification will have a neutral impact on benefits for society.

Final conclusions

The Working Group agreed that the Proposed Solution addressed the issue identified. With the solution meeting all the business requirements, the Proposer feels that this solution offers good value for money. The only other identified solution was removing Devices from customers' premises which would have a high associated cost.

Appendix 1: Progression timetable

On 19 July 2022, the Change Sub-Committee agreed that the modification can progress to the Report Phase. SECAS will now issue the Modification Report Consultation. The Change Board vote will take place on 24 August 2022 under Self-Governance.

Timetable	
Event/Action	Date
Draft Proposal raised	18 Dec 2019
Modification discussed with the Working Group	1 Apr 2020

Managed by

Timetable	
Event/Action	Date
Modification discussed with the Working Group	3 Jun 2020
Business requirements developed with Proposer and DCC	Jun 2020 – Jul 2021
Proposed Solution developed with Proposer	Jun 2020 – Jul 2021
Business requirements workshop	9 Aug 2021
Request for information	21 Sep – 12 Oct 2021
Preliminary Assessment requested	1 Nov 2021
Preliminary Assessment returned	26 Nov 2021
Modification discussed with the Working Group	5 Jan 2022
Refinement Consultation	1 Feb – 23 Feb 2022
Impact Assessment costs approved by Change Board	23 Mar 2022
Impact Assessment requested	23 Mar 2022
Impact Assessment returned	27 May 2022
Modification discussed with Working Group	6 Jul 2022
Modification presented to the CSC	19 Jul 2022
Modification Report Consultation	20 Jul – 10 Aug 2022
Change Board vote	24 Aug 2022

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
CPL	Certified Products List
CSC	Change Sub-Committee
DIG	DCC Interaction IT Group
DCC	Data Communications Company
DNO	Distribution Network Operator
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
ESMETS	Electricity Smart Metering Equipment Technical Specifications 2
GBCS	Great Britain Companion Specification
GUID	Global Unique Identifier
HAN	Home Area Network
MAC	Media Access Control

Glossary	
Acronym	Full term
MPAN	Meter Point Administration Number
OTA	Over The Air
PIT	Pre-Integration Testing
POA	Power Outage Alert
PRA	Power Restoration Alert
RFI	Request for information
RIG	RIIO-ED1 regulatory instructions and guidance
ROM	Rough order of magnitude
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SMETS	Smart Metering Technical Specifications
SR	Service Request
TABASC	Technical Architecture and Business Architecture Sub-Committee
TOC	Technical Operations Centre
UIT	User Integration Testing

MP102B ‘Power Outage Alerts triggered by an OTA firmware upgrade – enduring solution’

Annex A

Business requirements – version 1.0

About this document

This document contains the business requirements that support the solution(s) for this Modification Proposal. It sets out the requirements along with any assumptions and considerations. The DCC will use this information to provide an assessment of the requirements that help shape the complete solution.

1. Business requirements

This section contains the functional business requirements. Based on these requirements a full solution will be developed.

Business Requirements	
Ref.	Requirement
1	An Over-the-Air (OTA) firmware update to a tracked Landis + Gyr Electricity Smart Metering Equipment (ESME) currently installed will not result in a Power Outage Alert (AD1 Alert) reaching the Network Operator in the first instance.
2	The Data Services Provider (DSP) will track firmware activations on tracked Landis + Gyr ESME and then suppress AD1 Alerts from the tracked Landis + Gyr ESME for 30 minutes.
3	If the Service Requests for firmware activations on tracked Landis + Gyr ESME contain a firmware activation date and time, the DSP will extract and record the firmware activation date and time. The DSP shall then suppress AD1 Alerts from the tracked Landis + Gyr ESME for 30 minutes starting at the recorded firmware activation time.

2. Considerations and assumptions

This section contains the considerations and assumptions for each business requirement.

2.1 General

This modification applies to Smart Metering Equipment Technical Specifications (SMETS) 2+ Devices only.

Following the Refinement Consultation, the Proposed Solution taken forward will be to track firmware activations and subsequent AD1 Alerts for the list of GUIDs that L+G have provided. This is referred to as the 'Enhanced Solution' in the DCC Preliminary Assessment.

2.2 Requirement 1: An Over-the-Air (OTA) firmware update to a tracked Landis + Gyr Electricity Smart Metering Equipment (ESME) currently installed will not result in a Power Outage Alert (AD1 Alert) reaching the Network Operator in the first instance.

ESME supply power to the Communications Hub (CH) utilising the Data Communications Company (DCC) Intimate Communications Hub Interface Specification (ICHIS). In the case of an OTA firmware update, the ESME could cut or drop the Direct Current (DC) power to the CH for a duration of up to three minutes or more. Once the duration has reached three minutes a Power Outage Alert (POA) in the form of an AD1 Alert will be sent to the relevant Distribution Network Operator (DNO). The DNO will not be able to identify if the AD1 Alert has been caused by a firmware upgrade and subsequent reboot or a genuine loss of DC power to the CH. As DNOs have a responsibility to their customers to investigate the root cause of the Power Outage Event, this can result in unnecessary use of resources such as dispatching a technician to site.

The solution will need to stop POAs reaching the relevant DNO when power is lost for longer than three minutes as part of an OTA firmware upgrade process.

During the Refinement Process, L+G highlighted that approximately 1.4 million meters have been produced that could cut the power to the CH for a duration of three minutes or more. SECAS, the

Proposer and the DCC have access to the Global Unique Identifier (GUID) list containing the 1.4m Devices. These are referred to as 'tracked Landis + Gyr ESME' in this document.

One other meter Manufacturer (Aclara) also has Devices that act in this way, though they will no longer be updated. As a result, these are considered out of scope of this modification.

2.3 Requirement 2: The Data Services Provider (DSP) will track firmware activations on tracked Landis + Gyr ESME and then suppress AD1 Alerts from the tracked Landis + Gyr ESME for 30 minutes.

For the DSP to prevent the DNO from receiving AD1 Alerts triggered by an OTA firmware activation, the DSP will need to track OTA firmware activations. This will reduce the risk of the DSP suppressing a genuine AD1 Alert from reaching the DNO. Firmware activations can be tracked through Service Requests (SRs) such as SR 11.3 'Activate Firmware'. **Please note that a firmware activation can be future dated by the User and that Requirement 2 does not cover future dated firmware activations.**

L+G have advised us that from the point the activation starts, the meter takes 12 to 15 minutes to complete the OTA upgrade. For the impacted meters, the power would be cut to the CH during that 12-15 min period. 30 minutes has been deemed a reasonable number to adopt as this would allow for any outliers and any scenarios where the meter clock was a few minutes out of sync on a scheduled activation.

The DSP have advised that the 30-minute period will be configurable. This will help futureproof the Proposed Solution in case the period needs to be reduced or extended.

2.4 Requirement 3: If the Service Requests for firmware activations on tracked Landis + Gyr ESME contain a firmware activation date and time, the DSP will extract and record the firmware activation date and time. The DSP shall then suppress AD1 Alerts from the tracked Landis + Gyr ESME for 30 minutes starting at the recorded firmware activation time.

Firmware activations can either be for immediate activation or future dated. Suppliers can set the date up to 30 days into the future for firmware activation Service Requests (SR 11.3). Suppression of AD1 Alerts based on only the submission of a firmware activation Service Request will not suppress the AD1 Alert in the case of a future dated activation. Requirement 3 covers Requirement 2 and also adds the case of future dated firmware activation being included in the Service Request.

The DSP will first check if the Service Request is targeted for an L+G ESME included within the GUID list. If the ESME is included within the GUID list, the DSP will examine whether the Service Request contains a future dated activation;

- If present, the DSP will record the activation date and suppress AD1s for a period of 30 minutes starting at the recorded date.
- If no future dated activation date is present, the DSP will suppress AD1s for a period of 30 minutes starting at the present time.

3. Glossary

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

Glossary	
Acronym	Full term
CH	Communications Hub
DC	Direct Current
DCC	Data Communications Company
DNO	Distribution Network Operator
DSP	Data Service Provider
ESME	Electricity Smart Metering Equipment
GUID	Global Unique Identifier
ICHIS	Intimate Communications Hub Interface Specification
L+G	Landis + Gyr
POA	Power Outage Alert
OTA	Over the Air
SMETS	Smart Metering Equipment Technical Specifications
SR	Service Request

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MP102B ‘Power Outage Alerts triggered by an OTA firmware upgrade - enduring solution’

Annex B

Legal text – version 1.0

About this document

This document contains the redlined changes to the SEC that would be required to deliver this Modification Proposal.

This document contains the changes required to deliver the Proposed Solution.

Section F ‘Smart Metering System Requirements’

These changes have been redlined against Section F version 11.0.

Amend Section F4.9 and add Sections F4.9A and F4.9B as follows:

Communications with Communications Hubs by DCC over the SM WAN

F4.8 Except where expressly permitted or obliged by this Code, the DCC shall ensure that the only Devices with which it communicates over the SM WAN are those listed in the Smart Metering Inventory. Where a Communications Hub Function or Gas Proxy Function has an SMI Status of ‘suspended’, the DCC shall only initiate a communication with that Device (where it is the target device) if following the successful execution of such communication the DCC can reasonably expect that the associated Communication Hub’s Device Model will become one that is listed on the Central Product List.

F4.9 ~~Except in the circumstances described in Section F4.9B, w~~Where the DCC receives an ~~Power Outage Event (AD1)~~ Alert from a Communications Hub Function indicating that no power supply has been available to that Communications Hub Function for a period of at least three minutes, the DCC shall send a copy of the Alert to the Import Supplier (if any) and Electricity Distributor (if any) for that Communications Hub Function.

~~F4.9A The DCC shall maintain a list of Devices which are known to cause a Communications Hub Function to send a Power Outage Event (AD1) Alert for a short period (of greater than three minutes) following commencement of a firmware update.~~

~~F4.9B In relation to Devices on such list, in the case of a no Power Outage Event (AD1)Alert being received by the DCC within the period of 30 minutes following commencement of a firmware update, the DCC shall not send a copy of the Alert to the Import Supplier or the Electricity Distributor (but the DCC shall record and store details of the Alert, including its suppression in accordance with this Section F4.9B).~~

SEC Modification Proposal, MP102B, DCC CR4483

**Power Outage Alerts triggered by an OTA
firmware upgrade - enduring solution**

Full Impact Assessment (FIA)

Version:

1.0

Date:

27th May, 2022

Author:

DCC

Classification:

Public

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Appendix B: Glossary17

1 Executive Summary

The Change Board are asked to approve the following for implementation:

- Total cost to implement MP102B of £197,524, which comprises:
 - £144,252 in Design, Build and PIT costs
 - £53,272 in release costs (SIT and Implementation)
- A timescale to complete the implementation of seven (7) months
- Include MP102B in the June 2023 SEC Release
- Application Support costs of £1,722 per month

Problem Statement

Over the Air (OTA) firmware updates can cause some Electricity Smart Metering Equipment (ESME) to interrupt power to the Comms Hub and thus generate a Power Outage Alert (POA). The Distribution Network Operator (DNO) is unable to tell whether there is a real issue with the power to the premises or whether the POA was generated as a result of a firmware upgrade to the ESME.

The fundamental business requirement for DCC under MP102B is to build a mechanism to suppress any Power Outage Alerts (DCC Alert AD1) which may have been caused by a firmware update to a specific set of Landis+Gyr ESME Devices.

The DCC solution presented in this Full Impact Assessment (FIA) will suppress AD1 Alerts for a specific list of Landis+Gyr ESME Globally Unique Identifiers (GUIDs).

Benefit Summary

By implementing either solution proposed in this Modification, DNOs will be able to more reliably interpret POAs as an indication of a genuine supply outage at a consumer's premises and, conversely, will not receive spurious POAs caused by OTA firmware updates, which may currently lead DNOs to expend resource unnecessarily to:

- either to check the energisation status of each meter from which a POA is received; or
- send a member of staff to site to investigate.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
27/05/2022	1.0	Issued to SECAS

2.2 Associated Documents

This document is associated with the following documents:

#	Title and Originator's Reference	Source	Issue Date
1	MP102B Modification Report v0.8	SECAS	22/05/2021
2	MP102B Business Requirements v0.4	SECAS	13/09/2021
3	MP102B CR4483 - PIA - Power Outage Alerts triggered by an OTA firmware upgrade - enduring solution v1.0	DCC	15/11/2021

2.3 Document Information

The Proposer for this Modification is Matthew Alexander of SSEN.

The Preliminary Impact Assessment (PIA) was requested of DCC on 15 October 2021, and accepted on 22 October 2021. It was completed on 15 November 2021. A Full Impact Assessment was requested on 1 April 2022.

3 Solution Requirements and Overview

Problem Statement In this section, the context of the Modification, assumptions, and the requirements are stated.

The requirements have been provided by SECAS, the Proposer, and the Working Group.

3.1 Context

POAs are used by DNOs to improve customer service by becoming aware of power outages sooner rather than relying on their customers to contact them. POAs enable the DNO to restore supply to affected customers more efficiently and more quickly.

OTA firmware updates can cause ESME to generate a POA. The DNO is unable to tell whether there is a real issue with the power to the premises or whether it the POA was generated as a result of a firmware upgrade to the ESME.

Investigations during the Refinement Process found the scale of the issue affecting existing meters much greater than initially envisaged. Due to an anticipated lengthy lead time for implementation where meter Manufacturers could potentially still produce Devices that cause erroneous POAs, it was agreed that there should be two separate solutions to address the issue:

- MP102A: a Technical Specifications document change for meter Manufacturers to abide by for ESME produced after implementation (implemented as part of the November 2020 SEC Release); and
- MP102B: an enduring solution for the set of meters that are currently installed and which cannot be upgraded OTA to eliminate the behaviour.

3.2 Problem Statement

Over the Air (OTA) firmware updates can cause some ESME to interrupt power to the Comms Hub and thus generate a POA. The DNO is unable to tell whether there is a real issue with the power to the premises or whether the POA was generated as a result of a firmware upgrade to the ESME.

3.3 Business Requirements

There are three business requirements for this Modification.

Ref	Requirements
1	An OTA firmware update to a tracked Landis+Gyr ESME currently installed will not result in a Power Outage Alert (AD1 Alert) reaching the Network Operator in the first instance.
2	The Data Services Provider (DSP) will track firmware activations on tracked Landis+Gyr Landis+Gyr ESME and then suppress AD1 Alerts from the tracked Landis+Gyr ESME for 30 minutes.
3	If the Service Requests for firmware activations on a tracked L + G ESME contain a firmware activation date and time, the DSP will extract and record the firmware activation date and time. The DSP shall then suppress AD1 Alerts from the tracked Landis+Gyr ESME for 30 minutes starting at the recorded firmware activation time.

The Working Group requested that during the Full Impact Assessment, the DCC assess tracking firmware activations and subsequent AD1 Alerts only for the list of GUIDs that Landis+Gyr have provided for Devices that exhibit the behaviour described in the problem statement. In the PIA, this was known as the “Enhanced Solution”.

In response to the PIA, the Proposer and members of the Working Group also requested that the Power Outage Alert Suppression log, which forms part of the proposed DCC solution, be made available to the relevant SEC Parties (Electricity Distributors).

3.4 Scope

This solution will be applicable only to specific Landis+Gyr SMETS2 ESME, as identified by their GUID.

4 Solution Overview

Changes to the DSP are required for this Modification solution.

4.1 Overview

The solution requires changes to the motorway and reporting components of the DSP application.

DSP has been provided with a list of devices that are to be subject to AD1 alert suppression, which was supplied to DCC along with this Modification. DSP has based its price on this list of GUIDs and any variation to that list in advance of, or during implementation may be subject to a further Change Request.

On receipt of a firmware activation Service Request (SRV11.3 only), the motorway records the device's CHF as activation in progress if the following are true:

- the Target device is a SMETS2 ESME;
- the manufacturer is included in the configurable list of manufacturers subject to AD1 alert suppression (initially configured to be Landis+Gyr);
- the device is included in the list provided to DCC.

On Demand and Future Dated modes of operation are handled. Future Dated processing includes processing of cancellations.

On receipt of an AD1 alert, the motorway checks whether the alert is for a device that is recorded as activation in progress and within the configurable time period allowed. If so then an entry is added to the Power Outage Alert Suppression log, and no further processing is performed, i.e. the alert is not passed to any Service Users, and no Service Audit Trail entry is recorded.

The Power Outage Alert Suppression log is a new log file. Log files are transferred to the DCC via the ESI interface on a timed basis, or whenever the log reaches a certain size.

All behaviour is implemented behind a feature switch.

4.2 Request Management

In southbound processing, Request Management will build a tracking mechanism that records firmware activations in progress for affected devices. Devices will be tracked for 30 minutes (this tracking time is configurable).

In northbound processing, Request Management will check whether an AD1 Alert is for a device currently being tracked and, if so, will stop processing and add an entry to the 'Power Outage Suppression Log'.

Request Manager will be configured to transfer Power Outage Suppression logs to the Report Server.

4.3 Data Management / Data Model

Data Management needs to support tracking of firmware activation requests. There will be changes to the data model to support this.

Data Management will also need to build housekeeping functionality to manage the firmware activation tracking data.

4.4 Reporting

The Report Server will be configured to recognise and process incoming Power Outage Suppression Logs. Standard ESI report headers and footers will be added and transferred to the DCC via the ESI Gateway, for onwards distribution to SEC Parties via the DCC SharePoint.

There will be a small amount of effort undertaken by the DCC to make use of the existing solution for automatic distribution of files to SEC Parties' SharePoint libraries.

4.5 Security Impact

The DSP Security Assurance team has reviewed this change. There is no material impact on the DSP system security implementation. DCC has provided to DSP a list of devices that are to be subject to AD1 alert suppression. The contents of this file will be incorporated into the software build.

The Security Assurance team will provide general security oversight of the implementation throughout, in accordance with DSP's contractual requirements:

- reviewing test artefacts and outcomes where there is a potential security consideration;
- attending meetings where required by the implementation teams; and
- liaising with DCC as necessary on any security related concerns.

No additional Penetration Testing will take place as a result of this change on the basis that:

- there are no material changes to DSP interfaces;
- there are no material changes to the security implementation; and
- there is no new infrastructure being introduced.

As a result of the above, there is no requirement to update the Protective Monitoring implementation.

4.6 Technical Specifications and Documentation

There are no changes to any of the Technical Specifications.

Updates to the SEC will be required to require that DCC suppresses AD1 Alerts in specific circumstances and for specific Devices.

4.7 Infrastructure Components

There is no impact to infrastructure as part of this Modification.

4.8 Application Support

DSP has included a period of enhanced support immediately after go-live of MP102B - Early Life Support (ELS) - which provides enhanced monitoring and checking of system health and aims to investigate and address any anomalous behaviour before service incidents materialise. Further, the ELS provides assistance to DCC in incidents where Service Users are unprepared for the changes introduced within the release and which are therefore most likely to be found post go live.

4.9 Service Impact

The introduction of this new Service User facing functionality has some potential to result in user queries that are passed through to the DSP Applications Management Support team. It is estimated that this may result in up to seven simple complexity additional calls per month.

No changes to SLAs or reporting are expected as a result of this change.

5 Testing Considerations

This Full Impact Assessment includes the cost to develop, fully test and deliver this SEC Modification.

5.1 Pre-Integration Testing

The DSP PIT team will design and implement the functional updates required to the DSP for the change.

System Testing will be carried out to prove that the functionality specified in the Design has been implemented against agreed acceptance criteria. Both manual and automated testing is in scope. The DSP PIT System Test team create manual tests (and data). Test execution covers manual testing and automated regression test packs.

Once PIT Complete status is achieved, the PIT team will support post PIT activities in the form of technical support and defect fixes to allow DSP to achieve its test exit obligations.

The updates to the DSP system and the timing of the PIT exit will be agreed with the DCC through updates, submission and review of the Solution Design documents.

5.2 System Integration Testing (SIT)

MP102B will be implemented into Production via a SEC Release (currently planned for June 2023).

This section covers only activities and deliverables that are specific to MP102B. It does not, therefore, include System Regression testing or SIT Management and Governance activities, including test completion reporting, which will be incorporated in to a SEC Release Change Request. Furthermore, this response includes effort only for MP102B-specific contributions to the SIT artefacts that will be produced under the relevant SEC Release Change Request.

The DSP SIT team will plan, prepare and execute tests that demonstrate the key changes in behaviour for MP102B across the DCC Total System, comprising:

- AD1 alerts are suppressed for a period of 30 minutes following an ESME firmware OTA for an ESME that is included in the GUID list of devices requiring AD1 alert suppression;
- AD1 alerts that are suppressed are logged and reported via the ESI to DCC.

The DSP SIT team will be in control of all tests executed within the SIT environment, planning and co-ordinating test across all other Service Providers. DCC will engage with all Service Providers to secure their support for SIT.

Testing will be executed in SIT-B environment only and will align with existing release practices at the time of submission.

The effort for test reporting produced on completion of the Solution Test will be included in the SEC Release Change Request for the release in which this MP102B is eventually deployed to Production.

5.3 User Integration Testing (UIT)

There is no perceived need to test this separately in the UIT environment.

6 Implementation Timescales and Releases

This Modification is expected to be included in a SEC Release in June 2023. Implementation timescales will be finalised as part of the relevant SEC Release Change Request.

6.1 Change Lead Times and Timelines

From the date of approval (in accordance with Section D9 of the SEC), to implement the changes proposed DCC requires a lead time of approximately **seven months**.

The broad breakdown of the testing regime is shown in the following table in months after an approval decision date (D).

Phase	Duration
SECAS agreement on scope of release	
CAN signature	D + 1 Month
Design, Build and PIT Phase	3 Months
SIT and UI Phase, aligned with Release Dates	3 Months
Transition to Operations and Go Live	D + 7 Months

6.2 SEC Release Allocation and Other Code Impacts

This Modification is expected to be implemented as part of the June 2023 SEC Release, however the allocation to a release may be dependent on other Modification timings and the suitability of a release. No functionality overlap with other Modifications has been identified at the time of undertaking this Impact Assessment.

6.3 Costs and Charges

This section indicates the quote for all phases of application development stage for this Modification. Note these costs assume a release of just this SEC Modification without any other Modifications or Change Requests in the release, which is not truly reflective of what the post-PIT test costs or programme duration will look like. A calculation of those costs will be carried out when the contents of the future Release are finalised, and the post-PIT costs determined through a "Grouping CR" also referred to as a "Release CR".

£	Design, Build, and PIT	Integration Testing, SIT	TTO (including Early Life Support for a period of 1 month following go- live)	Total
MP102B	£144,252	£44,304	£8,968	£197,524

Design	The production of detailed System and Service designs to deliver all new requirements.
Build	The development of the designed Systems and Services to create a solution (e.g. code, systems, or products) that can be tested and implemented.
Pre-Integration Testing (PIT)	Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC.
Systems Integration Testing (SIT)	All the Service Provider's PIT-complete solutions are brought together and tested as an integrated solution, ensuring all SP solutions align and operate as an end-to-end solution.
Implementation to Live (TTO)	The solution is implemented into production environments and made ready for use by Users as part of a live service.

6.3.1 Application Support Costs

Application Support costs of **£1,722** per month have been calculated for additional call volumes (seven simple complexity calls per month).

6.3.2 Changes to the DSP Contract

The contract updates will be detailed within the CAN and will impact the following schedules:

- Schedule 2.1: Review to determine whether updates are required as a result of the new functional requirements outlined within this FIA;
- DCC Obligations will require new obligations for the DCC to achieve the deliverables under this Modification;

- Schedule 4.1: Solution Design documents will need to be updated;
- Schedule 6.1 - to reflect delivery milestones;
- Schedule 7.1: Define payments associated with Sch 6.1 milestones.

Appendix A: Risks, Assumptions, Issues, and Dependencies

The tables below provide a summary of the Risks, Assumptions, Issues, and Dependencies (RAID) observed during the production of the Full Impact Assessment. DCC requests that the Working Group considers this section and considers any material matters that have been identified. Changes may impact the proposed solution, implementation costs and/or implementation timescales.

Risks

None at this time.

Assumptions

These assumptions have been used in the creation of this Full Impact Assessment. Any changes to the assumptions may require DCC to undertake further assessment, prior to the contracting and implementation of this change.

Ref	Description	Status/Mitigation
MP102B-A1	The effort and Charges presented in this FIA assume that the GUID List will remain unchanged, without having to add or remove items from it.	Open
MP102B-A2	The alerts that are suppressed as a result of this MP102B shall not be subject to any Performance Measures that would normally apply.	Open
MP102B-A3	It is assumed that the proposed suppression of AD1 notifications under MP102B would still enable DCC Service Users (e.g. DNOs) to meet their safety obligations - i.e. any failure of the DCC to report an actual power outage at premises (not caused by a OTA firmware update) hosting one of the specified Landis+Gyr ESME devices for up to 30 minutes due to the suppression of DSP's notification capability would not impact the safety or continuity of energy supply to consumers due to the presence of mitigations within the wider industry ecosystem outside of the provisions of the SEC.	Open
MP102B-A4	Real Landis+Gyr ESME that cause the AD1 alert following an OTA will be available to DCC for testing purposes and will cause the AD1 alert when tested in SIT.	Open
MP102B-A5	The Landis+Gyr ESME Devices that cause the AD1 Alert following an OTA do not send 8F35 or 8F36 (power restoration) Alerts during the same process and therefore will not result in uncorrelated 8F35/8F36 Alerts as a result of the suppression of AD1 Alerts following OTA, which would otherwise be flagged in the Power Outage Alert reports produced by the DCC.	Open
MP102B-A6	It will be acceptable for a single, consolidated, Power Outage Alert Suppression log to be distributed periodically to all Electricity Distributors.	Open

Issues

None at this time.

Dependencies

None at this time.

Appendix B: Glossary

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

Acronym	Definition
CR	DCC Change Request
DCC	Data Communications Company
DNO	Distribution Network Operator
DSP	Data Service Provider
ELS	Early Life Support
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
I&C	Installation and Commissioning
OTA	Over the Air
PIA	Preliminary Impact Assessment
POA	Power Outage Alert
PIT	Pre-Integration Testing
RAID	Risks, Assumptions, Issues and Dependencies
ROM	Rough Order of Magnitude (cost)
RSA	Registered Supplier Agent
SAT	Service Audit Trail
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specification
SRV	Service Request Variant
SSI	Self Service Interface
UIT	User Integration Testing

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MP102B ‘Power Outage Alerts triggered by an OTA firmware upgrade – enduring solution’

Annex D

Refinement Consultation responses

About this document

This document contains the full collated responses received to the MP102B Refinement Consultation.

Question 1: Do you agree that the solution[s] put forward will effectively resolve the identified issue?

Question 1				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	Implementing either solution will come with a risk that a genuine power outage that occurs within the suppression window will not have an AD1 alert generated and subsequently sent through to the DNO. However, we believe that both the Proposed and Alternative Solution will help to alleviate the issue identified and the benefit outweighs this specific risk. As a result we prefer the alternative solution for this reason, as it further reduces the risk of suppressing genuine power outage alerts, however the PIA doesn't clearly show the cost difference in the two proposed solutions so we are unable to make a completely informed decision.	-
E.ON	Large Supplier	Yes	Preference for only blocking the POAs from the fixed list of 1.4 million affected ESME GUIDs. The majority of L+G ESMEs are not affected, and there is a possibility that a small but possibly significant number of genuine POAs will be blocked if all L+G ESMEs are in scope.	-
Electricity North West Ltd	Network Party	Yes	The 2nd option adds some additional complexity for DCC and L&G in maintaining the list of affected device GUIDs	-

Question 1				
Respondent	Category	Response	Rationale	SECAS Response
			but there is no direct impact to ourselves between the two options proposed.	
Scottish and Southern Electricity Networks	Network Party	Yes	As we understand the impacted manufacturer and the scenario in which the spurious outage alerts are created, we believe that this solution will resolve the issue.	-
UK Power Networks	Network Party	Yes	UK Power Networks agrees that both the Proposed and the Alternative solution will effectively resolve the identified issue of POAs being generated when an “over-the-air” firmware update is activated on particular L&G ESMEs, where the ESME reboot time exceeds three minutes and interrupts the power supply to the communications hub. The suppression of POAs generated by an OTA firmware update will reduce the risk of customer inconvenience and also support Network Parties to avoid incurring additional costs. If this issue is not addressed: • DNOs will either need to check the energisation status of each meter from which a POA is received (by means of a ping), or • DNOs will need to send a member of staff to site to investigate, if the ping was unsuccessful.	-

Question 1				
Respondent	Category	Response	Rationale	SECAS Response
			We believe that the Alternative Solution, though similar to the Proposed Solution, is straightforward and a better option because it tracks firmware update activation requests for devices listed by L&G as not working in the desired manner. If in the future other ESMEs were identified as causing the same issue, then their GUID reference numbers could be added to the GUID list.	

Question 2: Do you agree with the proposed implementation approach?

Question 2				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	We support the solution being implemented ASAP. For clarity does this mean that there will be no technical uplift in November 2023 as this is happening in June instead?	At this time, the November 2023 SEC Release will prioritise the implementation (if approved) of MP162 'SEC changes required to deliver MHHS' . Other Technical Specifications-impacting modifications will be implemented as part of the June 2023 SEC Release.
E.ON	Large Supplier	Yes	It is a straightforward, logical implementation approach.	-
Electricity North West Ltd	Network Party	Yes	It is important that the quality and reliability of Power Outage Alerts be as high as possible. An implementation date of 29 June 2023 must be the target.	-
Scottish and Southern Electricity Networks	Network Party	Yes	As the spurious alerts are not identifiable by Network Parties, an earlier release would be preferable.	-
UK Power Networks	Network Party	Yes	We agree with the implementation approach as recommended by SECAS for an implementation date of 29 June 2023 (June 2023 SEC Release) if a decision to approve is received on or before 27 October 2022. We also believe that options should also be explored to bring the implementation date forward to minimise the	-

Question 2				
Respondent	Category	Response	Rationale	SECAS Response
			impact on customers and to avoid additional costs for Network Parties as outlined in our response to Question 1.	

Question 3: Will there be any impact on your organisation to implement MP102B?

Question 3				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	We have already designed our systems to try and work around the spurious AD1s generated as a result of a POA. We will be impacted by this modification as we will need to re-evaluate our processes and potentially update our systems accordingly.	-
E.ON	Large Supplier	No	This does not have any work impact on Suppliers. L+G can provide the list of GUIDs required.	-
Electricity North West Ltd	Network Party	No	The implementation of MP102B will reduce the volume of erroneous alerts arriving at our gateway.	-
Scottish and Southern Electricity Networks	Network Party	No	No implementation effort required.	-
UK Power Networks	Network Party	Yes	There will be a positive impact on UK Power Networks if MP102B is implemented as it is a long-awaited resolution to an issue that is delaying full integration of POAs into our BAU processes. However, there will be an adverse impact on UK Power Networks if the implementation date of 29 June 2023 is not met because it will delay further our ability to reliably use the POAs within our business processes.	-

Question 4: Will your organisation incur any costs in implementing MP102B?

Question 4				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	We would potentially incur costs as a result of this modification as we will need to re-evaluate our processes and potentially update our systems accordingly. Until we know exactly what the solution is we won't know what will be involved, however these costs would not outweigh the benefits of this modification.	-
E.ON	Large Supplier	No costs, apart from the DCC bill shared amongst all parties!	No impact to Suppliers.	-
Electricity North West Ltd	Network Party	No costs	The implementation of MP102B will reduce the volume of erroneous alerts arriving at our gateway.	-
Scottish and Southern Electricity Networks	Network Party	No costs	No comments.	-
UK Power Networks	Network Party	Yes	If the identified issue continues because the modification is not implemented, UK Power Networks will be required to develop/continue processes to mitigate risks from the	-

Question 4				
Respondent	Category	Response	Rationale	SECAS Response
			spurious POAs adversely affecting any benefits we could deliver to our customers. There will be a cost for further development to enhance and implement our POA filter that we estimate being between £100k to £250k.	

Question 5: How long from the point of approval would your organisation need to implement MP102B?

Question 5				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	N/A	No comment.	-
E.ON	Large Supplier	N/A	This does not have any work impact on Suppliers.	-
Electricity North West Ltd	Network Party	N/A	The implementation of MP102B will reduce the volume of erroneous alerts arriving at our gateway.	-
Scottish and Southern Electricity Networks	Network Party	N/A	No comment.	-
UK Power Networks	Network Party	See below	From the point of approval of MP102B we may require a short period of time to review our BAU processes and implement any changes identified for managing power cuts at single premises on receipt of a POA.	-

Question 6: Do you believe that MP102B would better facilitate the General SEC Objectives?

Question 6				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	We believe that this modification better facilitates SEC Objective (a) by ensuring efficient operation of the Smart Metering Systems at Energy Consumer's premises.	-
E.ON	Large Supplier	Yes	This solution facilitates the efficient provision, installation, operation and interoperability of smart metering systems at energy consumers' premises within Great Britain.	-
Electricity North West Ltd	Network Party	Yes	Reducing the volume of non-genuine AD1 alerts will: - Remove the need for additional activity/traffic on the smart meter communications system that would be associated with addition service requests to ascertain the status of the supply; - Reduce the risk that ENWL would need to make telephone contact with the customer (with the associated cost and use of valuable resource) to ascertain if they were off supply. This can cause distress if the customer is not at home and they do not know if their supply is off; and - Reduce the risk that ENWL would need to attend site (with the associated cost and use of valuable resource) to ascertain the status of the supply.	-

Question 6				
Respondent	Category	Response	Rationale	SECAS Response
Scottish and Southern Electricity Networks	Network Party	Yes	We believe that this will better facilitate SEC objective (a) as detailed in the modification report.	-
UK Power Networks	Network Party	Yes	We agree with the proposers views of this modification, which will reduce the non-genuine AD1 alerts, that it will better facilitate the General SEC Objectives as set out in Section C1, in particular: - the first General SEC Objective, namely to facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain. In addition; - the fifth General SEC Objective, namely to facilitate such innovation in the design and operation of Energy Networks (as defined in the Data Communications Company Licence) as will best contribute to the delivery of a secure and sustainable Supply of Energy;	-

Question 7: Do you believe there will be any impacts on or benefits to consumers if MP102B is implemented?

Question 7				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	This modification will help DNOs to more accurately identify when there is a genuine Power Outage rather than a spurious alert. It will also result in the DNOs not having to visit consumers' properties to check they have supply as a result of a firmware upgrade.	-
E.ON	Large Supplier	Yes	The DNO should be able to handle power outage alerts in a more efficient way and therefore be more responsive to real customer power outages.	-
Electricity North West Ltd	Network Party	Yes	The impact on consumers are all benefits. See response to question 6.	-
Scottish and Southern Electricity Networks	Network Party	Yes	We believe that customers are positively impacted by this modification as it will improve the trustworthiness of the power outage alerts received by DNOs.	-
UK Power Networks	Network Party	Yes	We believe our customers will benefit from the implementation of MP102B because it will ensure we are not sent spurious AD1 alerts from an OTA firmware update and are made aware when there is a genuine Power Outage. This will enable us to take proactive action	-

Question 7				
Respondent	Category	Response	Rationale	SECAS Response
			to quickly restore the power supply to our customers and provide a high level of customer service. It will also ensure we do not have to unnecessarily visit customers' properties to check their electricity supply where a spurious notification would have previously been received.	

Question 8: Noting the costs and benefits of this modification, do you believe MP102B should be approved?

Question 8				
Respondent	Category	Response	Rationale	SECAS Response
Western Power Distribution	Network Party	Yes	Whilst we believe that this modification should be approved, we wish to better understand the difference in costs between the two options to gain a clear understanding of the cost/benefit case for each to make an informed decision on which option to progress.	-
E.ON	Large Supplier	Yes	The costs from DCC seem on the high side (as usual) for what is a straightforward change for a software company. However, quenching the erroneous Power Outage Alerts at the earliest point is the most efficient way of dealing with this issue, rather than those alerts percolating their way through the DCC to the DNO. Based on 2 ESME firmware upgrades per year, up to 2.8 million erroneous alerts can be quenched.	-
Electricity North West Ltd	Network Party	Yes	It will provide an enduring solution to an issue that has the potential to negatively impact the operation of the smart metering system for many years into the future and one which might only be resolved otherwise by the replacement of the electricity meter.	-

Question 8				
Respondent	Category	Response	Rationale	SECAS Response
Scottish and Southern Electricity Networks	Network Party	Yes	As this will resolve the issue of spurious alerts from devices that cannot be fixed remotely through firmware, we believe this modification should be approved.	-
UK Power Networks	Network Party	Yes	We believe MP102B should be implemented as soon as possible because this is a long-awaited resolution to an issue that is delaying our ability to fully deliver benefits to customers from the use of POAs.	-

Question 9: Please provide any further comments you may have

Question 9			
Respondent	Category	Comments	SECAS Response
Western Power Distribution	Network Party	We note the SEC Modification Report calls the solutions the 'Proposed Solution' and the 'Alternative Solution', but the DCC IA uses the phrases 'Core Solution' and 'Enhanced Solution'. For ease going forward it would be useful if these were referenced in a consistent manner. We also note that in the PIA it states that there will be no changes to reporting as a result of this change. We would like to understand if there is a need to report on the number of AD1s that have been suppressed as a result of this change. We would also like to understand exactly if/how any of these AD1s will show/be excluded in DCC reporting.	The Modification Report will be updated to progress the Alternative / Enhanced Solution. This will become the Proposed Solution and the previous solution relating to the suppression of POAs for all L+G Devices will be discarded. The decision will also be captured within the Modification Report.
E.ON	Large Supplier	No comment.	-
Electricity North West Ltd	Network Party	No comment.	-
Scottish and Southern Electricity Networks	Network Party	No comment.	-
UK Power Networks	Network Party	The principle being employed in this proposal to suppress spurious AD1 alerts generated by OTA firmware updates is good because it prevents spurious AD1 alerts being received by the Network Party. We	-

Question 9			
Respondent	Category	Comments	SECAS Response
		believe that this principle of using device GUIDs could be further developed and utilised by the DCC to suppress other types of spurious alerts, for example, from known “chatty” ESMEs generating high volumes of spurious alerts or for other manufacturer/model combinations which send spurious POAs.	