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MP096 'DNO Power Outage Alerts'

Modification Report

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About this document

This document is a Modification Report. It currently sets out the background, issue, solution, impacts, costs, 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.

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This document also has four annexes:

- **Annex A** contains the Distribution Network Operator (DNO) requirements for the solution.
- **Annex B** contains the Data Communications Company (DCC) Technical Study Report.
- **Annex C** contains the public (WHITE) request for information (RFI) responses.
- **Annex D** contains the redlined changes to the Smart Energy Code (SEC) required to deliver the Proposed Solution.

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1. Summary

This Draft Proposal was raised by Del Kang of the DCC.

DNOs have systems in place to ensure that in the event of a power outage, where possible, power is automatically restored within three minutes. In the case of a power outage lasting more than three minutes, the DCC is obliged under the SEC to provide Power Outage Alerts (POAs) to Industry, including DNOs, within 60 seconds after the initial three minutes of the outage. Once power has been restored, a Power Restoration Alert (PRA) is sent to the DNO via the DCC Data Service Provider (DSP). This must also be sent within 60 seconds.

POAs and PRAs are key enablers for DNOs to deliver the benefits of the Smart Metering Implementation Programme.

The DCC is currently unable to meet this SEC obligation. A SEC transitional variation was approved by the Department of Business, Energy and Industrial Strategy (BEIS) to compensate for the difference for what is stated in the SEC and the DCC's current capability. This exception expired on 31 October 2018 and BEIS cannot offer an extension.

While the DCC fundamental Service Providers (including Communication Service Providers (CSPs) and the DSP) are compliant with the POA and PRA performance requirements specified in their contracts, the DCC does not currently meet the performance specified in the SEC. It is therefore proposing a modification to the SEC to rectify this position.

The Proposed Solution aims to amend the SEC to match baselined performance for the delivery of POAs and PRAs. The DCC recommend setting the POA target to 11 minutes, and 8 minutes for PRAs. The performance will be measured from the point in which the Alert volume reaches the 95th percentile. The performance captured in the SEC will be the overarching performance that encompasses the North, Central and South regions.

This modification will impact the DCC as they will have to deliver the agreed performance for POAs and PRAs. The estimated implementation cost is approximately £600 to update the SEC. If approved, this modification is targeted for the June 2022 SEC Release.

2. Issue

What are the current arrangements?

Power Outages

Distribution Network power outages are a common occurrence. There are various causes ranging from third party damage and weather-related events to equipment failure. For events affecting high voltage networks, it is normal practice for automation schemes to attempt power restoration to some or all customers affected within three minutes. On the low voltage networks however, there is little, or no, automation and power can only be restored by personnel attending site and carrying out a repair or by manual switching.

Prior to the implementation of the single power cut telephone number (105), DNOs were receiving between 20% and 40% of calls from consumers within five minutes of the start of the power outage event, and between 60% to 67% of calls within ten minutes.

In 2016, BEIS commissioned an external consultancy to conduct an in-depth investigation of the potential impacts and benefits of smart meters for DNOs. This included the increased data that Network Parties would have available from smart meters which would allow them to identify faults in the network earlier, restore electricity supply more quickly when outages occur, and take better informed investment decisions. This work included evidence published by BEIS, the Energy Networks Association (ENA), individual DNOs and Ofgem, as well as international studies. The identified Network benefits are included in the Smart Meter Implementation Programme Cost Benefits Analysis (CBA)¹, and are summarised below:

- Earlier Fault Notification
- Faster Restoration of Supply
- Reduction in Operational Costs to Fix Faults
- Reduction in Calls to Fault and Emergency Lines

The full potential of Network benefits is underpinned by delivery of automated smart meter POAs and PRAs to DNOs, at the performance requirement specified in the SEC.

What is the issue?

The SEC requirements for POAs and PRAs are specified in SEC Section H3.14(g). The requirement currently states that in the case of a power outage, an Alert must be sent to the DNO within 60 seconds (after an initial period of three minutes has passed to allow for the power to potentially be restored automatically). When the power is restored, a further Alert must also be sent within 60 seconds. The DCC is currently unable to meet the performance requirement for POA and PRA as set out in the SEC.

CSP contracts were developed in parallel with the SEC during the early stages of the Smart Meter Implementation Programme, and the CSP contracts do not include the same POA and PRA definitions and requirements that are specified in SEC. As a result, while the DCC is non-compliant with the SEC, Service Providers are compliant with the POA and PRA performance requirements specified in their contracts.

A SEC transitional variation was previously approved by BEIS to compensate for the difference between the SEC obligation and the DCC's current capability. This exception expired on 31 October 2018.

Why is the DCC non-compliant?

The current smart infrastructure and Devices have physical technical constraints which prevents meeting the current SEC requirements for POA and PRAs. This can only be overcome by changing the infrastructure, including the legacy Communications Hubs, which would involve significant timeframe and costs. The constraints have been illustrated in the DCC Technical Study Report (Annex B) in sections 4.2 and 4.3, which has been shared with DNOs and circulated to the Technical Architecture and Business Architecture Sub-Committee (TABASC) and Working Group Members.

¹ <https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

What is the impact this is having?

This issue has two primary impacts:

- DNOs are not able to deliver the expected benefits and cost efficiencies from smart meter Power Outage Alerts
- Energy Consumers do not receive the expected Network outage benefits from smart meters, including earlier fault notification and restoration.

What is the impact of doing nothing?

Doing nothing will result in:

- DNOs continuing to operate current power outage processes and practice but not receiving the anticipated benefits of the Smart Metering Programme. This is particularly important as the Revenue, Incentives, Innovation and Output (RIO II) price control assumes the DNOs can make use of the benefits of having accurate and timely POAs and PRAs.
- Energy Consumers not receiving the expected Network outage benefits from smart meters.

Impact on consumers

The performance of POAs and PRAs has a direct link to how quickly issues can be identified and then rectified in order to restore a consumer's power supply. The expectation of DNOs has been that the DCC would be compliant with the SEC and therefore deliver Alerts within 60 seconds. Due to the extended time necessary to deliver the Alerts, DNOs are more likely to incur calls from consumers left off supply. The costs of providing this level of customer service is ultimately borne by the consumer.

3. Solution

Proposed Solution

The DCC has proposed a solution where it will carry out testing to demonstrate current baseline performance. The DCC will measure the performance over an extended period, compared to the measurement taken at a specific point in time during the Technical Study. The SEC would then be amended to match this minimum baseline performance for speed of Alerts and success rates for POAs and PRAs. The performance captured in the SEC will be the overarching performance that encompasses the North, Central and South regions.

The DCC has analysed ten months' worth of data (and will continue to do so until MP096 enters the Report Phase) to baseline POA and PRA performance for both CSPs. The performance measurement data has been issued to DNOs for validation and transparency.

Over the ten months' worth of data, the best and worst performance spread for POAs spans from 3.85 minutes to 10.09 minutes. For PRAs the spread is from 0.78 minutes to 5.55 minutes. As such, the DCC is proposing setting the POA target to 11 minutes, and the PRA target to 8 minutes. The performance will be measured from the point in which the Alert volume reaches the 95th percentile.

Performance Measurement Methodology and Performance Measure Exceptions List

It is the DCC's intent to incorporate the below exclusions into the solution as they are deemed to be outside of its control:

- Clock drift
- Duplicate Alerts
- Devices producing abnormal volume of messages
- Undelivered Alerts during maintenance outages
- There are system limiting constraints that impact performance where volume exceeds current capacity. DCC reserve the right to exclude these figures:
 - POAs are limited to 5,000 per minute per CSP (not region)
 - PRAs are limited to one message, per second, per channel, for CSP North

These exclusions are not to be captured within the SEC legal text drafting. Instead, this will fall under the process outlined within Section 1.6.1 'Allowed Exceptions' of the Performance Measurement Methodology (PMM). The specific exclusions will need to be captured in the Performance Measure Exceptions List (PMEL). Please note that the PMM and PMEL are DCC-owned documents and the PMM can be found [here](#), and the PMEL can be accessed by DCC Users on the DCC SharePoint.

The DCC has advised that the exclusions related to this modification will be managed in the same way as the Alert Code exclusions list implemented as part of the [SECMP0062 'Northbound Application Traffic Management - Alert Storm Protection'](#) agreed solution. Any changes to the list will be managed by the Panel, who may choose to delegate this duty to the Operations Group (OPSG).

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

If approved, this modification will bring the DCC into compliance with the SEC regarding POA and PRA delivery. The DCC will be required to monitor performance across all regions and investigate any instances where the performance does not meet what is stated within the SEC.

Please note that Electricity Network Operators are not anticipated to be impacted by this modification's implementation, though will be impacted by the Proposed Solution. This will be due to the DCC delivering an agreed level of performance to Electricity Network Operators.

DCC System

This modification will have no impact on DCC Systems.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Section H 'DCC Services'

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

Consumers

The Working Group has highlighted that a better understanding of the service that is provided to the consumer results in an indirect benefit. Further views will be gathered from Parties during the Refinement Consultation.

Other industry Codes

This modification will have no impact on other industry Codes.

Greenhouse gas emissions

This modification will have no impact on greenhouse gas emissions.

5. Costs

DCC costs

The DCC does not anticipate incurring any cost as a result of this modification's implementation.

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

Information on SEC Party costs will be gathered as part of the Refinement Consultation.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **30 June 2022** (June 2022 SEC Release) if a decision to approve is received on or before 16 June 2022; or
- **3 November 2022** (November 2022 SEC Release) if a decision to approve is received after 16 June 2022 but on or before 20 October 2022.

As MP096 will only involve legal text changes, the modification is expected to be implemented ten Working Days after decision. This may however change if respondents state in the Refinement Consultation that they require a longer lead time to implement changes. Please note that this is an Authority Determined modification.

7. Assessment of the proposal

Observations on the issue

DCC communication with DNOs

There has been extensive engagement between the DCC and DNOs prior to this modification to understand the DNO impacts and what the DCC Systems are currently capable of regarding POAs and PRAs. This has included investigating undelivered Alerts being experienced by DNOs from outages and the lack of anticipated performance around the resulting POAs and PRAs.

The DNOs understand that the DCC System characteristics mean that their requirements may be difficult to achieve in full and that they may need to compromise to reach agreement on the final arrangements for POAs and PRAs. To support this, the DNOs re-assessed their requirements and submitted a revised requirements document via the ENA on 8 October 2019. The document outlined the requirements that the DNOs deem necessary to improve the current situation and can be found in Annex A.

A DNO representative stated that the reason behind the need for DP096 is a DCC non-compliance with the SEC, but any costs involved will be incurred by Parties. The DNO commented that this is wrong given it is a non-compliance issue. Whilst they understand that the Service Provider contracts do not align with the SEC, the DCC contract should comply as it should be compliant with the SEC.

They also commented that due to the extensive time the DCC and DNOs have been working together, any potential thoughts from SEC Parties regarding alternative solutions are most likely to have been discussed and investigated. These could be considered as part of the Refinement Process.

The DNOs' requirements stem from the basing of their price control and smart metering benefits assessments on the expectations of the performance that was set out in the SEC. Whilst DNOs have since agreed to relax the 60-second delivery to 120-seconds through this modification, the requirements under DP096 stem from the link to the DNOs' price control.

The DNO representative also highlighted that the improvement in the CSP North's PRA performance noted in the DCC Technical Study Report, which was produced as part of the DCC's Technical Study, is due to the DCC utilising the Communications Hub PRA as opposed to the Electricity Smart Metering Equipment (ESME) PRA. This will have implications as Users' systems will need to be changed to accommodate this.

Furthermore, the DNO representative commented that the DCC Technical Study Report contains more than 20 system enhancement options across the three Service Providers. DNOs requested the DCC to recommend the optimum selection that represents the best value for money. Once the DCC provided its recommendation, the DNOs agreed that DP096 could progress. DNOs did not state whether they agree or support either option at this stage, as this will be decided upon by the Working Group.

DCC investigations into the issue

The DCC has carried out three key areas of investigation to better understand current POA and PRA performance, underlying issues and improvement potential:

- Comprehensive Technical Study to identify options to improve POA and PRA performance
- Development of technical capability to measure POA and PRA performance
- Testing of POA and PRA performance with different meter and Communications Hub combinations to replicate and diagnose issues identified by DNOs

The Technical Study Report has confirmed that, while significant improvements can be delivered, it is not possible to fully achieve current SEC performance for POA or PRA due to fundamental limitations of the SMETS2 hardware and network design in both the North and South & Central CSP regions.

The testing work, undertaken as part of the Technical Study, has identified defects with existing smart meter Devices which must also be resolved to achieve maximum potential POA and PRA performance.

The DCC has developed two options (Option A and Option B) to improve POA and PRA performance, up to the maximum achievable performance within the design constraints of the current system. The improvement options and the related design constraints have been shared and discussed with the DNOs as part of the Development Stage.

It should also be noted that, while performance improvement for the current SMETS2 network is constrained, the DCC Network Evolution Programme (NEP) should offer significant improvements.

The current assumption for the commencement of the roll-out of the 4G Communications Hubs is Q4 of 2023/24². Please note the Network Evolution Programme is only targeted at the South and Central CSP regions. As such, permanent derogation would have to be applied to the North region. Furthermore, the full scope for the NEP is yet to be agreed.

The DCC's full Technical Study Report can be found in Annex B.

Views of the TABASC

The DCC and the Smart Energy Code Administrator and Secretariat (SECAS) presented DP096 during the Development Stage to the TABASC to seek views on the Proposed Solution options put forward by the DCC.

The TABASC Chair stated that it would be beneficial to understand the scale of the issue the modification proposes to address. DNOs commented that until recently, this has been hard to clarify due to capabilities to measure performance at a large scale being limited. A key goal of the DCC's project has been to implement sufficient measurement capability, which has been met. This will be discussed further during the Refinement Process when carrying out a CBA.

An ENA representative stated that a clear benefit in the modification must be DNOs getting earlier visibility of outage events than is currently experienced. This is particularly important for outages that occur on low voltage networks. This is to prevent smaller outages not being identified if a large-scale outage occurs in the surrounding area at the same time.

The DCC offered further information on the root causes of the issue. For CSP Central & South, the Communications Hub design does not have sufficient battery and super capacitor performance to keep the Communications Hub in an operational state for three minutes in the event of an outage. Another cause identified is the time taken to reconnect to the network. For the CSP North, the Communications Hub battery and super capacitor perform in a way that enables them to remain operational in the case of an outage. The Communications Hub can remain operational for approximately ten minutes. The constraint in the North is that the network has a narrow bandwidth. In an outage event, the common radio channel used by Communications Hubs can become saturated. To compensate, the CSP North allocates time windows for Alert delivery which ultimately draws out time of delivery (for both POAs and PRAs).

A TABASC Member sympathised with the DCC as the requirement in the SEC is extremely difficult to deliver. They suggested that the SEC requirement is altered depending on the size of the outage. This is due to varying levels of performance depending on how many premises are impacted by the outage (due to the networks having a limit of how many Alerts they can facilitate at one time). This was supported by members.

The NEP was discussed as a potential solution. Members agreed that the NEP must consider the DNO requirements. This is to ensure that enhancements have been consulted upon and agreed as there may be an impact on DP096 as a result. This will be raised at network design discussions.

The TABASC discussed the Proposed Solution options that the DCC had put forward. The DCC agreed that it would investigate implementing option A in the CSP North region and option B in the CSP Central & South region during the Refinement Process. It noted that the performance enhancements between the two options is relatively small in comparison to the associated cost.

² Please see Panel paper 91_1604_05 (Amber) for more details.

An alternative solution was put forward by a TABASC member whereby the relevant CSP would send a summarised Alert to the DNO. The DNOs commented that this would be extremely complicated to obtain the necessary information, such as scale of the outage. This approach was deemed likely to be unfeasible due to the possibility of not being alerted to outages affecting vulnerable customers.

The TABASC Chair highlighted that there may be occasions where DNOs receive PRAs before the relevant POAs. The DCC confirmed that under certain circumstances, this is the case.

The TABASC agreed that DP096 was ready to proceed to the Refinement Process. Once in the Refinement Process, the Proposer, the TABASC and SECAS would work together to help further refine the solution options following consideration by the Working Group, to provide a cost-effective solution that will enhance current POA/PRA performance as per the DNO requirements.

CSC discussions

Due to the high costs associated with the DCC's Proposed Solution options, the Change Sub-Committee (CSC) asked who would be liable to pay for the changes if the modification is approved. The DCC has stated that the SEC's POA requirements were not included in the baseline versions of the Service Provider contracts. SEC non-compliance therefore reflects a gap in the original scope and cost for the Smart Metering Implementation Programme (SMIP) delivery and is not a performance failure. The incremental change cost to improve performance is therefore a part of the fundamental build cost for the SMIP and, DCC believe, should be borne by DCC customers. The DCC believes that these costs should be shared by all industry participants as per the rest of the SMIP costs.

The CSC also asked why the SEC requirements weren't included in the Service Provider contracts. The DCC responded stating that the original Service Provider contracts were developed in parallel with the SEC and that the POA requirements codified in the SEC were not reflected in the final Service Provider contracts when they were awarded. With operational experience from the smart meter roll-out, the industry now has a better understanding of operational needs and limitations and the wider operation of the shared smart metering infrastructure. This has enabled a better-informed discussion of DNO performance and quality requirements for Alerts, which are considered under this proposal.

The CSC also queried why this is a SEC modification. The DCC responded that the SEC Modification Process provides the best route for engagement and transparency with the industry on the scope, nature and costs of the proposed changes. Furthermore, the SEC Modification Process enables the DCC to deliver, test and implement the change in the most efficient way. The DCC has also stated that, if approved and the proposed changes are implemented, SEC Parties will need to agree a change to the SEC to align with the newly achieved DCC performance; it is extremely difficult to achieve the requirements currently set out in the SEC without major changes throughout the smart metering infrastructure.

CSC recommendations

SECAS presented the Draft Proposal to the CSC in order to gain members' recommendations for progression. A DNO representative reiterated that POA and PRA performance is a key factor in their cost benefit realisation. This is currently based on the SEC requirement of the Alert being sent to the User within 60 seconds of the Alert being communicated to or generated by the Communications Hub. They confirmed that they understand and accept that the SEC obligations in their current form are extremely difficult to meet; however DNOs seek the best performance possible as the longer Alert delivery times erode the benefits sought.

The CSC advised that the benefits of any Proposed Solution must be clearly articulated. This is due to the likely high costs involved that the Consumer will ultimately pay.

The CSC recommended that DP096 will likely require standalone Working Group meetings to discuss in detail the solution options. A member also advised that business requirements will need to undergo close scrutiny to ensure they address the issue and current technical architecture is considered such as technical limitations of how many Communications Hubs can re-join a network at once.

The CSC agreed that DP096 was ready to be converted into a Modification Proposal and should progress to the Refinement Process.

Does the issue require a SEC Modification?

The Working Group agreed that the issue is clear and defined, however, wanted to understand the SEC Panel's view on a modification being raised to address a SEC non-compliance. The SEC Panel did previously acknowledge that this is the case, but felt that the issue was clear and that the modification should progress to the Refinement Process. A member suggested that a new costing mechanism should be put in place to cover the costs of the Proposed Solution at the time (system improvements), as currently SEC Parties would have to pay to address the non-compliance. Another member queried whether the Modification Process provided the best forum for this issue to be discussed and resolved.

The Working Group discussed how MP096 differs from the usual SEC modification framework, due to the Technical Study undertaken by the DCC and Service Providers before the modification reached the Refinement Process. The Service Providers have already completed some of the work that would normally be required when completing a DCC Preliminary Assessment.

A member asked for the Authority's opinion of MP096. The Authority stated that modifications are industry-led and that it would expect to see a detailed cost-benefit analysis for doing nothing, a simple legal text change to match current DCC capability, and for the DCC System changes. The Authority confirmed that it will investigate the DCC's non-compliance separately from the modification, as this is its current process for all other non-compliance issues.

A member highlighted that the modification's progression and ultimately its decision will be assessed against the SEC Objectives. It is important that this is considered when building a robust solution as this will form the basis of a decision to approve or reject the modification, along with a clear cost-benefit analysis.

Solution development

DCC's initial Proposed Solution

The DCC's initial Proposed Solution was developed through the DCC's Technical Study throughout 2020. This solution consisted of system improvements to enhance POA/PRA performance.

The solution initially focused on achieving the greatest level of improvement that can be achieved against the current SEC specification without any compromises to the technology or costs.

The DCC identified a number of technical changes within its systems that would improve the current performance. Two implementation options were then developed:

- Option A represented the minimum change required to achieve a material performance improvement and the rough order of magnitude (ROM) cost of this was £15.2m (up to implementation).
- Option B represented the maximum achievable performance improvement and the ROM cost was £21m (up to implementation).

There would also have been an incremental annual operating cost of £0.7m for either option.

A comparison of the Option A and Option B enhancements against current POA and PRA performance for each region is shown below:

North Region						
Volume	Power Outage Alert			Power Restoration Performance		
	Current	Option A	Option B	Current	Option A	Option B
50% message delivery	6m 30s	3m 50s	3m 55s	24m 00s	3m 47s	3m 47s
80% message delivery	8m 45s	5m 30s	4m 45s	36m 00s	5m 12s	5m 12s
95% message delivery ³	15m 00s	10m 00s	10m 00s	45m 00s	8m 00s	8m 00s

Central and South Regions						
Volume	Power Outage Alert			Power Restoration Performance		
	Current	Option A	Option B	Current	Option A	Option B
50% message delivery	9m 15s	6m 30s	5m 30s	2m 40s	2m 40s	1m 50s
80% message delivery	11m 00s	7m 12s	6m 12s	3m 10s	3m 10s	2m 20s
99% message delivery	13m 00s	8m 00s	7m 00s	3m 30s	3m 30s	3m 00s

Notes:

- All timings show estimated performance from time of power interruption, based on CSP modelling.
- POA and PRA performance is shown for an outage impacting 30,000 homes.
- The Central and South Regions has a scenario where due to power failure there may be a Communications Hub attachment issue, but the likelihood of this happening is estimated at 1%.
- The actual performance enhancement will need to be validated after the changes have been delivered.

The above data is also shown graphically in Appendix 1, including comparison against the current SEC performance specification.

Option A consisted of five individual technical changes and Option B augmented this with an additional three technical changes:

³ The North Region has a maximum 95% Alert message delivery due to message collision and data loss (this is when the system can't handle the volume of data and starts to lose data)

Technical changes for Options A and B	
Change	Results of enhancements
1. Introduction of a microservices in the Central South Region Systems.	This will improve the speed of the Alerts and increase the volume of Alerts. This would also benefit firmware updates for Home Area Network (HAN) Devices
2. Send the restoration Alert from the North Region Communications Hub.	This will improve the timing of the restoration Alert.
3. Introduction of new North Region Alert channels.	This will improve the speed of the Alerts and reduces the number of Alerts lost.
4. Relax the throttle between North Region Systems and the DSP.	This will improve the speed of the Alerts.
5. Implement an additional motorway in the DSP systems.	This will enable the above changes to be delivered by providing additional capacity.

Additional technical changes for Option B	
Change	Results of enhancements
6. Reduce the Central South Region Communications Hub reboot time.	This will improve the speed of the Alerts.
7. Reduce the Central South Region Communications Hub dither timing.	This will improve the speed of the Alerts.
8. Modify the North Region Alert processing timings.	This will improve the speed of the Alerts.

DCC's initial recommendation

If this solution was progressed, the DCC would have recommended Option B to deliver the maximum POA and PRA performance improvement:

- Option B would deliver a clear POA performance advantage compared to Option A for the Central & South region
- In the North region, Option B would enable POA performance to be optimised for outages impacting up to 30,000 homes, creating a performance advantage over Option A for medium-scale outages as prioritised by DNOs.

While Option B would not fully meet the current SEC requirements, this would enable the maximum potential benefits delivery for DNOs, and therefore the maximum benefit for energy consumers.

Request for information

In order to progress MP096, the Working Group agreed that an RFI consultation should be issued to industry in order to better understand the business case of the modification. The RFI covered the below options:

- Option 1: Leaving the SEC in its current form
- Option 2: Amending the SEC to reflect current POA/PRA performance
- Option 3: The DCC System change options noted above to enhance Alert delivery performance (this option includes subsequent changes to the SEC):

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- Option 3A – minimum change required to deliver a significant improvement
- Option 3B – maximum performance improvement

The DCC set out the risks and benefits for each potential solution option as follows:

Option 1 – Do nothing

Option 1 risks and benefits	
Risks	Benefits
<ul style="list-style-type: none"> • Distribution Network Operators (DNOs) will realise reduced POA/PRA benefits from that envisaged in the Smart Metering Implementation Programme (SMIP) cost-benefit analysis (CBA). • The derogation would need to be continually renewed in the Central and South CSP regions until the replacement of 4G CHs, and indefinitely in the North CSP region. • The 4G CHs may not deliver to the current SEC obligations as the procurement has not yet concluded. A full benefits analysis will have to be carried out to satisfy industry, BEIS and Ofgem that any new Devices offer value for money. 	<ul style="list-style-type: none"> • This offers the simplest and cheapest option for industry. • This option will resolve the non-compliance for the DCC.

Option 2 – Change the SEC to current DCC performance

Option 2 risks and benefits	
Risks	Benefits
<ul style="list-style-type: none"> • DNOs will realise reduced POA/PRA benefits from that envisaged in the SMIP CBA. • This option delivers no improvement to the timing or quality of the DCC's current performance as no system changes will be carried out. Improvement in performance will be reliant on the 4G Communications Hub roll-out. • This option could result in introducing different SEC performance requirements between the North region and the Central and South regions. 	<ul style="list-style-type: none"> • Low cost for industry as only document changes to the SEC would be required. • This is the quickest of the options to be implemented. • The DCC would be compliant with the SEC, following an amendment to the requirements.

Option 3 – Change the SEC following implementing system improvement

Option 3 risks and benefits	
Risks	Benefits
<ul style="list-style-type: none"> DNOs will realise reduced POA/PRA benefits from that envisaged in the SMIP CBA. This option could result in introducing different SEC performance requirements between the North region and the Central and South regions. The ROM implementation cost has been assessed as between £6.5m and £10.9m up to the end of PIT. 	<ul style="list-style-type: none"> Improved timing and accuracy of Alerts delivers some of the benefits in the SMIP CBA. This is yet to be quantified but Option 3 is expected to deliver higher benefits than Option 1 or 2. The DCC would be compliant with the SEC, following an amendment to the requirements. No dependency on Network Evolution Programme timescales or 4G Device performance. Costs of the change would be spread over a 10-year business case in the Central and South regions, as these second and third generation (2G and 3G) CHs will start to be replaced from 2024/25. Costs of the change would be spread over a 15-year business case in the North region, as there is currently no planned upgrade to these CHs.

RFI responses

SECAS received eight responses to the RFI, which consisted of six Networks Parties and two Large Suppliers.

The option that received the most support was Option 2 with four supportive parties. Each of the other options received support from two parties each. One of the supportive parties for Option 3 specified Option 3A as their preferred solution.

The key points raised by the respondents for Option 1 were that it is the most straightforward option to implement, however it does not rectify the non-compliance issue or deliver any benefits to customers. Furthermore, the NEP will only implement improvements in Central & South regions, and so the DCC would have to seek a permanent derogation for the CSP North. The DCC has since agreed to no longer progress this as a viable option.

For Option 2, respondents commented that the main benefactor would be the DCC as the non-compliance would be resolved. One advantage however for SEC Parties is that the DCC will be held accountable for providing a specified level of service. Respondents requested that the DCC carries out further testing to demonstrate current baseline Alert performance. This is due to discrepancies between what is stated in the Technical Study Paper and what Networks Parties are experiencing. One respondent proposed that the SEC should be aligned with current system capabilities as opposed to current performance.

Another respondent suggested that the SEC should be aligned to current CSP contracts. This has since been identified as an error, whereby the intention was to align to current system capabilities.

The respondents highlighted that Option 3 (both sub-options) is the only option that enhances POA/PRA performance. However, Networks Parties understand that neither sub-option provides substantial improvements for small scale outages (which occur more frequently). Furthermore, Networks Parties highlighted that they use Supervisory Control and Data Acquisition (SCADA) monitoring on High Voltage networks to detect large scale outages. This reduces the advantages of Option 3. A respondent also noted that in order to improve PRA performance in the North region, the Alert would actually be a Communications Hub PRA. This would require Networks Parties having to implement system changes to facilitate the new Alert. A Networks Party also confirmed that Option 3B provides no further benefits to customers based in the North region, compared to Option 3A.

Following a review of the RFI responses, the DCC decided to progress Option 2. This solution will result in the DCC delivering an agreed level of performance to DNOs. The performance will be agreed during the Refinement Process by the Working Group and through the Refinement Consultation. The DCC will use a minimum of ten months' worth of data to baseline the performance.

The Working Group's review of the RFI responses

Concerns were raised surrounding the cost reduction for the DCC System change options (3A and 3B) from when the Technical Study was completed to when the RFI was issued. The costs contained within the RFI are up to Pre-Integration Testing (PIT), whereas those in the Technical Study Paper included implementation costs. The DCC commented that any post-PIT costs would be spread amongst other SEC modifications and DCC Change Requests being implemented within the same SEC Release. A BEIS representative requested that further transparency surrounding costs needed to be presented to the Working Group.

The DCC agreed to carry out a cost-based risk-benefit analysis on the RFI Proposed Solution options 2, 3A and 3B. The DCC would also set out the measurement framework for Option 2 to log current performance. The modification would then be taken to the OPSG, the TABASC and returned to the Working Group. The DCC also added that it will look to add clarification to the NEP scope.

SECAS informed the Working Group of the alternative solution put forward by a Network Party. The DCC commented that a misinterpretation may have taken place as current performance already exceeds what is stated in the CSP contracts. A Network Party representative stated that this should be corrected to current capability instead. It has since been confirmed that the intent of the alternative solution is to align the SEC to current system capabilities.

The TABASC's review of the RFI responses and views on the Proposed Solution

Once in the Refinement Process, MP096 returned to the TABASC to seek views on the Proposed Solution and numerous sub-options developed by the DCC. The TABASC Chair stated that if the option of amending the SEC to current performance is progressed, there should be an overarching statement that next generation Communications Hubs are to meet the SEC requirement as it currently written (within 60 seconds). This is to allow visibility of what is expected of next generation Communications Hubs for any potential Manufacturers intending to build the new Devices. The DCC commented that at this stage, no potential next generation Communications Hub bidder had voiced concern over the current SEC requirement.

A member from a Large Supplier felt that any costs borne from MP096 should be incurred by the DCC as otherwise it would mean that SEC Parties would in effect be paying for the service they currently receive twice. They also commented that the 'Do Nothing' option should still be explored but did not suggest financial penalties for the DCC's non-compliance. The TABASC Chair agreed with this suggestion as it would mean that prospective next generation Communications Hub bidders would have to meet the SEC in its current form. A Device Manufacturer did however comment that, although next generation Communications Hubs will offer enhanced performance, there are still constraints within network design that can impact the speed and quality of Alerts.

The OPSG's review of the RFI responses and views on the Proposed Solution

The OPSG queried why the DCC has decided to progress option 2. SECAS commented that this was the option that gained the most support under the RFI consultation. A Networks Party member advised that the work DNOs completed against the ENA cost benefit analysis referenced in the RFI responses resulted in option 3 (DCC system changes) being ruled out.

When discussing the sub-options of option 2, comments were received that the third sub-option of amending the SEC to the lowest level of performance by both CSPs would not be satisfactory as it would allow the better performing CSP to reduce its performance.

Comments were also received regarding possible divergence by setting different Service Level Agreements (SLAs) for each CSP region. This is deemed to be high risk, though a member commented that due to differing architecture, a variation in performance is inevitable.

The OPSG was reluctant to cast an official position on the modification, though it advised that amending the SEC to what is currently being delivered was the best way of addressing the issue defined.

Proposed Solution sub-options

During solution development, the DCC produced three sub-options that have been discussed with the Working Group. They are as follows:

- **By Service Provider:**
 - There are differing levels of performance between each CSP region, due to topographical and system architecture differences (as set out in the DCC POA/PRA Tech Options Paper v5.0). The requirements will be set for each CSP to adhere to accordingly, based on confirmed performance.
- **Volumetric-based performance:**
 - Varying scale of outages will impact the performance of Alerts. As the volume increases there is a negative impact on the speed and success rates of Alerts received.
- **Lowest common denominator performance requirements:**
 - The DCC shall review the performance of both CSPs and the legal text will reflect the minimum achievable performance both CSPs can achieve.

Taking into consideration the Working Group discussions and further refinement of the Proposed Solution, the DCC chose sub-option three (Lowest common denominator performance requirements) as the solution they wish to implement.

The DCC Interaction IT Group's review of the Proposed Solution

The DCC provided the DNO-led DCC Interaction IT Group (DIG) meeting with an update on the Proposed Solution. DIG members advised that a crucial part of measuring the performance of Alerts (for both speed and volume) is measuring the time taken for the Alert to pass from the relevant CSP to DSP. This is out of scope of the DCC's measurement capability and can only be measured by the CSPs. The DCC responded that if their measurement capability can be proven to uphold a high level of accuracy (99%), implementing a CSP measurement framework may not be necessary.

The DIG further advised that if there is no penalty mechanism to compliment the proposed contractual obligations, there is a potential risk of reduced performance in the future.

Network Evolution Programme

During several Working Group meetings, the DCC has provided an overview of the current scope of the Network Evolution Programme. A Network Party has queried the differing information held within the current scope compared to a consultation issued on 6 April 2021. The DCC confirmed that they have included all the requirements necessary to be compliant with the SEC specifically around POA/PRAs. The DCC reiterated that the starting point for next generation Communications Hubs bidders is to be SEC compliant. Therefore, the DCC agree with the TABASC's view of retaining an obligation within the legal text for next generation Communications Hubs to meet the 60 second requirement. The DCC also advised that research has shown that it takes approximately ten seconds for the Alert to reach a Network Party from the DSP.

Polyphase ESME

During the September 2021 Working Group, a Network Party stated that in order to deliver the Proposed Solution, the DCC would have to consider the impact of polyphase ESME. This is due to different types of Power Outage Alerts being generated when individual phases lose power (this does not result in an AD1, 8F35 or 8F36 being generated). This was discussed again at the December 2021 Working Group, where the DCC commented that it does not propose including Polyphase ESME within MP096 as the volumes of these Devices installed are relatively low and does not impact Alert performance.

Clock drift

The issue surrounding Devices experiencing from clock drift has been discussed at several Working Group meetings. It was queried how clock drift impacts the accuracy of Alerts and subsequent reporting. This can result in Alerts being timestamped with inaccurate times compared to when they are received by the Network Party. The DCC confirmed that it is currently working with both CSPs to address the issue. To mitigate clock drift-associated inaccuracies, the DCC intends on using an interim solution, with the expectation that the clock drift issue will be resolved within six months. The Network Party requested transparency from the DCC's reporting on this issue as this will have a direct impact on Network Party reporting methodology. The DCC has since developed the Proposed

Solution, whereby there is a list of exclusions where the DCC cannot be held accountable for not meeting the SEC requirements. Clock drift is included in this list. This is due to the issue being outside of the DCC's control (though it is working with CSPs to address the issue).

Missing Alerts

During the December 2021 Working Group meeting, a Large Supplier queried the issue of missing Alerts. The DCC commented that there are a number of scenarios that can cause Alerts to be undelivered. The DCC added that this is something it will continue to investigate. A Network Party commented that it experienced an incident where its internal systems informed it of an outage, however no Alerts were received. The DCC clarified that undelivered Alerts would not impact the Proposed Solution as they would fall outside of the 95th-percentile range.

Views of Citizen's Advice

During the Refinement Process SECAS engaged with Citizen's Advice to update it on the progress of the modification and the Proposed Solution. Citizen's Advice stated that with the current Proposed Solution, from a consumer perspective, there is no benefit. Citizen's Advice advised that it is important that if the Proposed Solution results in current capabilities being incorporated into the SEC, that improvements are still considered. It elaborated that these may only be small but will provide some benefit to the consumer. This is with the intention of maximising performance of the current infrastructure before the rollout of Next Generation Communications Hubs commences.

Overlap with MP122B

During the Refinement Process, SECAS investigated any possible link to the issue and Proposed Solution of [MP122B 'Operational Metrics – Part B'](#). The issue defined under MP122B relates to the transparency of reporting and relevance of the measures contained within the DCC Performance Measurement Report (PMR). In its monthly review of the PMR, the Operations Group has found it increasingly difficult to report to the SEC Panel on the issues within the report.

As a result of the issues encountered, the Operational Metrics Review (OMR) was undertaken to better understand the PMR measures, consider amendments and recommendations of new performance indicators. Through workshops and User surveys, it is clear that Users want to see reporting that reflects the business processes that the DCC supports.

It was confirmed that, although not fully formed, the solution will not impact MP096. It has been agreed by the MP122B Working Group that the MP122 Proposed Solution will feature reporting that prioritises capturing data regarding successful delivery of Alerts over timeliness, and that POAs and PRAs will be outside the scope of the modification to remove any impact on MP096.

Views against the General SEC Objectives

Proposer's views

The Proposer believes that this modification better facilitates SEC Objective (b)⁴ as the proposed change to the SEC will bring DCC into compliance and this meet its obligations stemming from the licence conditions.

The Proposer also believes the modification better facilitates SEC Objective (g)⁵ as the DCC will deliver a consistent and agreed service level to the DNOs whilst in alignment with obligations under the SEC.

Industry views

The Working Group agreed with the DCC's views on MP096 better facilitating SEC Objectives (b) and (g) and added no further comments.

Industry views will be gathered through the Refinement Consultation.

Views against the consumer areas

Improved safety and reliability

This modification will have a neutral impact on safety and reliability.

Lower bills than would otherwise be the case

This modification will have a neutral impact on the cost of utility 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 service as the DCC will closely monitor the performance of POAs and PRAs to ensure compliance.

Benefits for society as a whole

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

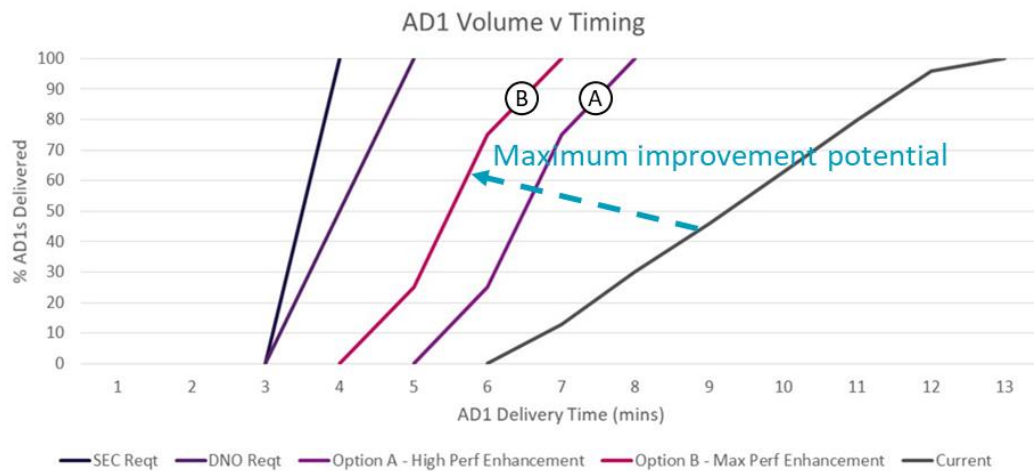
⁴ Enable the DCC to comply at all times with the objectives of the DCC licence and to discharge the other obligations imposed upon it by the DCC licence.

⁵ Facilitate the efficient and transparent administration and implementation of the SEC.

Appendix 1: Performance graphs

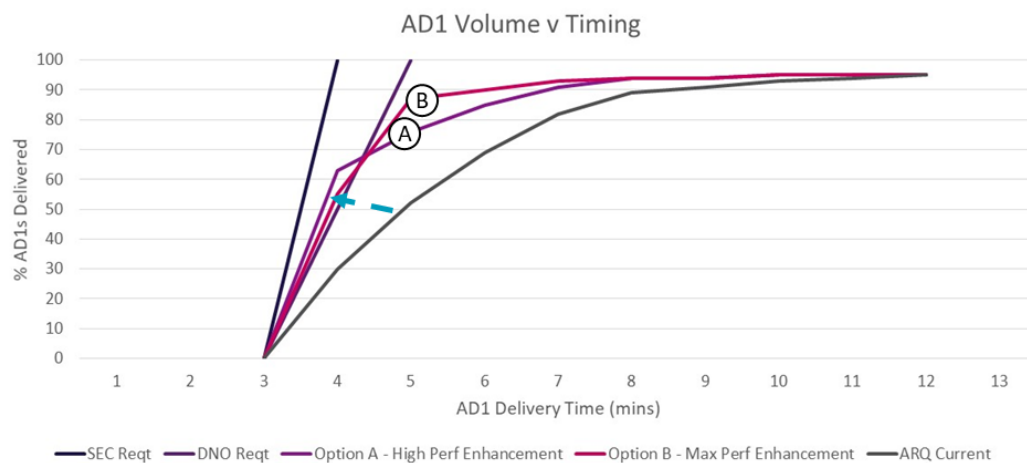
The below graphs show the comparison between SEC specification and enhancements.

South/Central Region POA performance:



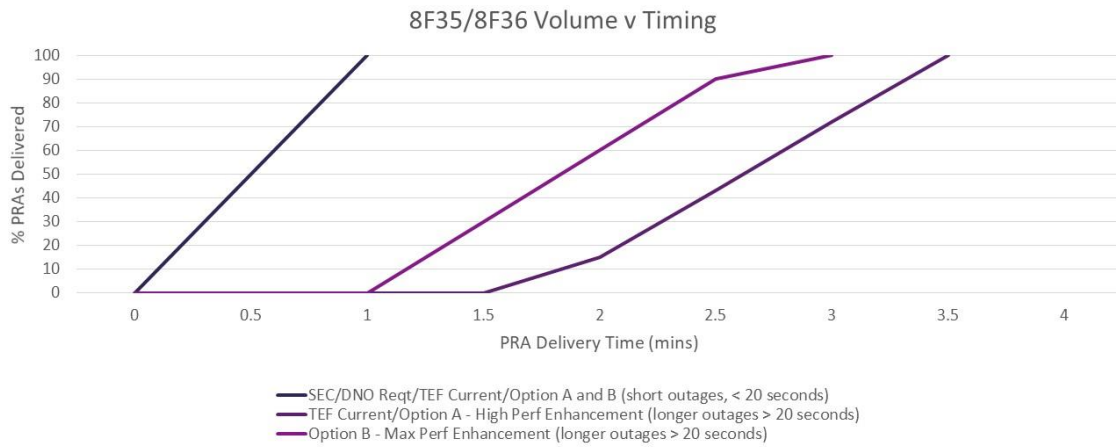
This graph shows the performance of the two solution options in relation to the percentage of AD1s delivered in a reduced amount of time compared with current performance, and the requirements of the DNOs and what is stated in the SEC for CSP S&C.

North Region POA performance:



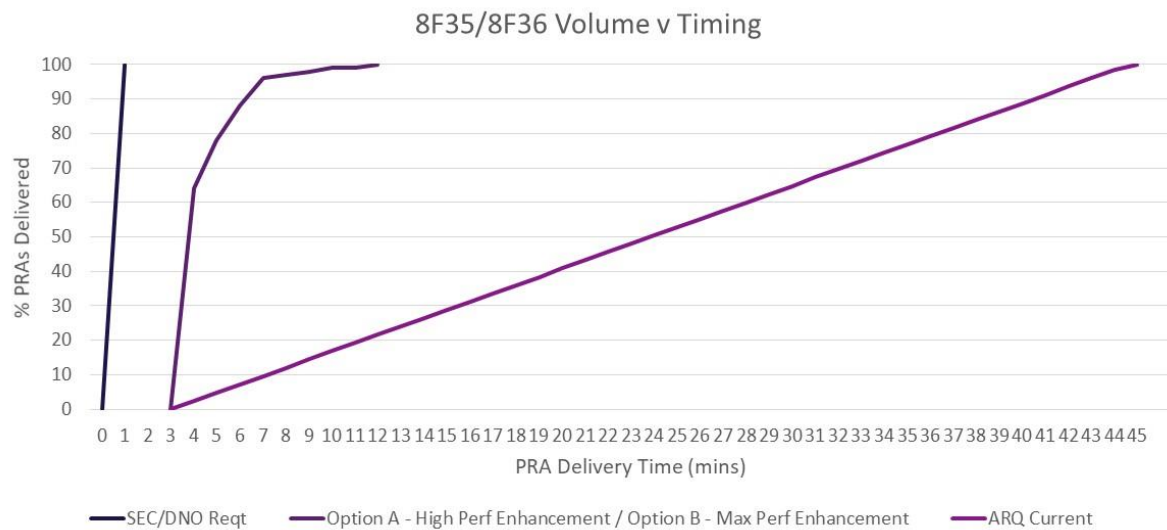
This graph shows the performance of the two solution options in relation to the percentage of AD1s delivered in a reduced amount of time compared with current performance, and the requirements of the DNOs and what is stated in the SEC for CSP N.

Central/South region PRA Performance for outages up to 30,000 premises



This graph shows the performance of the two solution options in relation to the percentage of PRAs delivered in a reduced amount of time compared with current performance, and the requirements of the DNOs and what is stated in the SEC for CSP S&C.

North Region PRA Performance for outages up to 30,000 premises



This graph shows the performance of the two solution options in relation to the percentage of PRAs delivered in a reduced amount of time compared with current performance, and the requirements of the DNOs and what is stated in the SEC for CSP N.

Appendix 2: Progression timetable

SECAS will issue the Refinement Consultation to obtain feedback from Parties on the modification. SECAS will review the responses with the Working Group before proceeding to the CSC under the recommendation that MP096 enters the Report Phase.

Timetable	
Action	Date
Draft Proposal raised	14 Nov 2019
Presented to CSC for initial comment	26 Nov 2019
Presented to CSC for further comment – placed on hold pending outcomes of DCC performance measurement project	2 Jan 2020
DCC Technical Study	Feb – Nov 2020
DCC Technical Study to DNOs	Dec 2020
Presented to CSC for further comment	5 Jan 2021
Proposed Solution options discussed with TABASC	4 Feb 2021
Presented to CSC for final comment and recommendations	23 Feb 2021
Panel converts Draft Proposal to Modification Proposal	12 Mar 2021
Modification discussed with Working Group	7 Apr 2021
Request for information issued	23 Apr – 17 May 2021
Modification discussed with Working Group	2 Jun 2021
Cost benefit analysis carried out for each solution option	Jun – Jul 2021
DCC measurement of current Alert performance	Jun – Jul 2021
Modification discussed with OPSG	3 Aug 2021
Modification discussed with TABASC	5 Aug 2021
Modification discussed with Working Group	1 Sep 2021
DCC gathering ten months' worth of performance data	Oct – Nov 2021
Legal text drafted with Proposer and SEC Lawyer	Nov 2021
Modification discussed with Working Group	1 Dec 2021
Refinement Consultation	6 Dec – 7 Jan 2022
Refinement Consultation responses reviewed with Working Group	2 Feb 2022
Modification Report approved by CSC	15 Feb 2022
Modification Report Consultation	21 Feb – 11 Mar 2022
Change Board Vote	23 Mar 2021
Authority decision	May 2022

Appendix 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
4G	Fourth Generation
BEIS	Department for Business, Energy and Industrial Strategy
CBA	Cost – Benefit Analysis
CSC	Change Sub-Committee
CSP	Communication Service Provider
DCC	Data Communications Company
DIG	DCC Interaction IT Group
DNO	Distribution Network Operator
DSP	Data Service Provider
ENA	Energy Networks Association
ESME	Electricity Smart Metering Equipment
HAN	Home Area Network
NEP	Network Evolution Programme
OMR	Operational Metrics Review
OPSG	Operations Group
PIT	Pre-Integration Testing
PMEL	Performance Measurement Exemptions List
PMM	Performance Measurement Methodology
POA	Power Outage Alert
PMR	Performance Measurement Report
PRA	Power Restoration Alert
RFI	Request for information
RIO II	Revenue, Incentives, Innovation and Output
ROM	rough order of magnitude
SEC	Smart Energy Code
SECAS	Smart Energy Code administrator and Secretariat
SLA	Service Level Agreement
SMIP	Smart Metering Implementation Programme
TABASC	Technical Architecture and Business Architecture Sub-Committee

This table lists all the DCC Alerts used in this document and the full name of that Alert.

Alerts	
Alert Code	Description
8F35	Supply Outage Restored Alert

Alerts	
Alert Code	Description
8F36	Supply Outage Restored (Outage >= three minutes) Alert
AD1	Power Outage Event Alert