

Power Outage and Power Restoration Alerts DNO Requirements

**ENA Smart Metering Steering Group
07 October 2019**

Introduction

This document has been produced to inform the discussions that will take place at the upcoming the SEC Working Group that will consider DCC's proposals for the delivery of Power Outage Alerts (POA) and Power Restoration Alerts (PRA). The text below summarises the DNO POA and PRA requirements, as they were at the outset of the Smart Metering Programme. The text does not provide a description of the service that the DNOs think they will receive due to the current limitations of the DCC/CSPs system.

DNOs believe that it is for the SEC Working Group, in partnership with DCC, to define the details that will enable an alternative solution to be found. Only DCC and their service providers can put forward the information needed for the Working Group to be able to conclude which solution is technically feasible and cost effective to put forward for a SEC Change. We expect that the Working Group will look for explicit clarity from DCC on the current achievable levels of performance. The group will also need a clear understanding of the costs/impact to raise these performance levels closer to meeting the DNO requirements as far as reasonably practicable.

DNOs understand that the DSP/CSP system characteristics mean that their requirements might be difficult to achieve and that they will have to compromise in order to reach agreement on the final arrangements for POA and PRA. . However, it is important that any CSP/DSP constraints are transparent and well-justified, and that decisions to reject suggested improvements are supported with sound cost/benefit evidence.

Although the DNOs are prepared for a compromise they expect that any proposed alternative solution put forward by DCC is clearly set out with a full description of the POA/PRA alert service levels that DNOs will experience. The compromise solution will still need to deliver meaningful outputs that the DNOs can work with to deliver service improvements to their network customers.

For example, the CSP may be able to add an element of 'location awareness' into their processing (derived from identifying the receiving base station or cellular tower location) and therefore could protect themselves from very large outages affecting one area whilst not impacting traffic from other areas. Such location awareness wouldn't need to rely on the DNO's own network topology, simply on an understanding of which receiving CSP location the alerts are picked up at. If this could be achieved it should guarantee near 100% delivery of small and isolated faults whilst also giving the DNOs sufficient notice of larger network event without needing to send every single alert for large events.

DNO Requirements for Power Outage Alerts

The following bullet points are taken from v1.9 of the DCC Power Alerts Project Briefing Paper.

1. DNOs require a Power Outage Alert for all outages of power to the meter which are longer than 3 minutes to be sent to the DNO. [See note below]
2. The DNOs require the Power Outage Alert to be delivered promptly, arriving at the DNO systems within 5 minutes of the start of the power outage (i.e. 2 minutes after the start of the Power Outage Event, which starts 3 minute after the start of the power outage)
 - a. Rationale: Prior to the implementation of the Single Power Cut Number (150) DNOs were receiving between 20% and 40% of calls within 5 minutes, and between 60% and 67% of calls within 10 minutes.
 - b. For clarity, any interruptions of less than 3 minutes in duration are not a reportable outage. The three minutes have been agreed with Ofgem and allows for DNO auto-reclose devices to operate and restore supplies on circuits that have automation. Once the outage data is proven reliable it is possible it will one day be used to report network reliability performance to Ofgem. It is therefore important to maintain the clear distinction between interruptions that are less than three minutes duration and those that are greater than three minutes duration.
3. The DNOs require the Power Outage Alert to be reliable and dependable
 - a. Rationale: Delivery of 99.5% of Power Outage Alerts from 250,000 power outage events in a year would result in 1,250 instances where customers would be off supply without the DNO being made aware by the Smart Metering system. Although proportionally these are few in number it's likely that on occasions it would include vulnerable customers. This might cause issues for the DNO particularly if consumers start to assume that the DNO will always know when the power has been lost to a premise.
4. The DNOs require the Power Outage Alert to be trustworthy.
 - a. Rationale: A 0.1% annual False Positive rate from 10,000,000 meters would result in 10,000 notifications to DNOs where the DNO would need to invest in validating the event. DNOs accept that there are situations where a false POA will be sent which is outside the DCC's control and are working with the relevant industry party to address these types of issues. We note that the impact of False Positives can be much more significant given the large volumes currently being experienced. One DNO is collaborating on a piece of analysis work on OTA AD1s with one supplier who is advising when they are conducting OTAs. We are hopeful that this is offer some possible workarounds to minimise the issues for the DNOs.
5. The DNOs require the format, reliability and behaviour of Power Outage Alert to be consistent between all Meter types and Comms Hub types and CSP regions.
6. The DNOs do not require the throughput of Power Outage Alerts relating to the same Power Outage Event to be very high as in situations where a large number of Power Outage Alerts are being simultaneously sent to any one DNO, it would be more than likely due to a situation where the DNO would already be aware of the outage via other monitoring equipment [see note below]

DNO Requirements for Power Restoration Alerts

1. DNOs require Power Restoration Alerts for all outages of power to the meter (i.e. those lasting less than 3 minutes and those lasting more than 3 minutes) to be sent to the DNO.
 - a. Rationale: Reliable delivery of Power Restoration Alerts eliminates the need for DNOs to send a Service Request to check the energisation Status (ping) meters.
2. The DNOs require the Power Restoration Alert to be delivered promptly, arriving at the DNO systems within 1 minute following the restoration of the power supply to the meter.
 - a. Rationale: Prompt delivery of Power Restoration Alerts eliminates the need for DNOs to send a Service Request to check the energisation Status (ping) meters.
3. The DNOs require the format, reliability and behaviour of Power Outage Alert to be consistent between all Meter type and Comms Hub types and CSP regions.

Note: Historical Position

The issue of POAs alerts was discussed between ENA and DECC in 2013. DECC's view was POAs required by DNOs for any given fault was:

- 100% alerts delivered for 50 meter outages
- 25% alerts delivered for 50-5000 meter outages
- 1 message delivered for >5000 meter outages
- Delivered within 60s of the end of the three minute period

DNOs generally agreed with this with the exception that the initial cut-off should be 250 meters rather than 50. This view emerged from the Power Outage workshop.

However, in discussion with DCC it became apparent that to deliver this functionality on a *per outage* basis DCC would need to hold a live DNO connectivity model so that they could differentiate between different network faults – and that this was unrealistic (and probably undesirable). From this, the concept that 'all' POAs would be required so that the DNO could assess the POAs against their connectivity models.

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DNO Requirements acronyms

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

Ref	Definition	Description
POA.1	POA for all outages > 3 minutes	Supply all AD1s with no message loss
POA.2	POAs delivered < 5 minutes	AD1s to be delivered within 5 minutes from the time outage occurred to when it is delivered to DNOs
POA.3	POAs must be reliable	There should be reliable delivery of AD1s
POA.4	POAs must be trustworthy	Messages should be accurate and not result in false positives (i.e. AD1 sent without an actual power outage) or false negatives (i.e. power outage without an AD1 sent)
POA.5	POAs must be consistent	AD1s should be consistent between meter types, CH types and CSP regions
PRA.1	All PRAs required	Supply all 8F35/8F36 messages with no message loss
PRA.2	PRAs delivered in < 1 min	8F35/8F36 messages to be delivered within 1 minute from the time it was generated by the ESME to when it is delivered to DNOs
PRA.3	PRAs must be consistent	8F35/8F36 messages should be consistent between meter types, CH types and CSP regions

A formal written response was received from the ENA on 07th October 2019 which outlined the above DNO requirements.