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Paper Reference:	**TABASC_64_0104_06**
Action:	**For Discussion**

MP102B 'Power Outage Alerts triggered by an OTA firmware upgrade – enduring solution' business case and Proposed Solution

1. Purpose

To discuss Smart Energy Code (SEC) Modification MP102B 'Power Outage Alerts triggered by an OTA firmware upgrade - enduring solution', the business case and the advantages, disadvantages and impacts of the Proposed Solutions provided by the Data Communications Company (DCC). The Smart Energy Code Administrator and Secretariat (SECAS) requests the Technical Architecture and Business Architecture Sub-Committee (TABASC) comment on the business case for this modification and to provide their opinion on the Proposed Solution, in order for SECAS to request the DCC Preliminary Assessment.

2. Modification summary

Experience has shown that implementing an Over the Air (OTA) firmware update on some Electricity Smart Metering Equipment (ESMEs) generates a Power Outage Alert (POA). This is because when some ESMEs activate a new firmware version it results in an interruption of the power supply to the Communications Hub (CH) (power to the CH is supplied by the ESME). If the power supply for the CH is interrupted for more than three minutes, then the CH must send a POA (the AD1 Alert).

The DCC then sends the AD1 Alert to the relevant Distribution Network Operator (DNO), who cannot tell whether there is a real issue with the power to the premises or whether it was just a firmware upgrade to the ESME. As DNOs need to respond to each POA, a POA initiated by an OTA firmware update will cause a DNO to put in place systems to check every POA to understand if it relates to a genuine power outage.

MP102A, which was implemented as part of the November 2020 SEC Release resolved the issue for newly manufactured Devices, whereas MP102B's sole purpose is to suppress any spurious Alerts from the current estate.

3. Business case

The TABASC has previously questioned the business case of this modification and so SECAS has made further investigations. The Proposer has highlighted that DNOs are mandated to realise benefits, and the Department of Business, Energy and Industrial Strategy (BEIS) Cost Benefit

Analysis (CBA) published in 2016 explains how DNOs must use Power Outage and Restoration Alerts to realise those benefits and to improve their service to Consumers. Furthermore, the Electricity Distribution Guaranteed Standard 2 (ESG2) states:

"Where an outage alert is received, the DNO should contact the customer as soon as reasonably practicable thereafter to check whether the customer is without power, but only between 8am and 9pm. However, this should not restrict the DNO from contacting a customer outside of those hours if the DNO considers it in the customer's interest to do so."

This means that the DNO is obliged to contact the Consumer, whether this is via telephone or site visit. As a result, when each firmware update takes place, the DNO would have to respond accordingly which could result in a high volume of site visits for non-genuine Power Outage Alerts. This would be of inconvenience to the Consumer and the DNO would have to bear the financial impact.

SECAS has also sought the views of meter Manufacturer Landis +Gyr that has previously advised that they have 1.4m meters currently installed that can cause this issue. Not all of these meters are currently causing the issue, however the Manufacturer advised that due to the flash memory in meters deteriorating over time and frequency of use, the number of meters causing the issue is likely to increase. This has been proven in test laboratories where meters are subject to extensive use.

The Manufacturer has provided the below statement:

'In the initial releases of the Landis + Gyr E470, it was identified that an OTA upgrade process could result in the power supply to the Communications Hub being cut for a sufficient time to trigger a AD1 Alert on power restoration. This scenario was seen at least once in customer testing and was replicated by L+G. The exact length of time that the Communications Hub is unpowered will depend upon the size of the OTA image and the efficiency of the meter in processing the upgrade. L+G manufactured 1.439 million meters before this issue was resolved with a change to the power management settings within the OTA upgrade process, a change that cannot be retrospectively applied to these meters. The vast majority of these meters will currently be active in the smart network.

L+G's view is that, while the number of AD1 Alerts generated by this population of meters is currently low, incidents may increase in the future as meters age or the size of OTA images increase. At this time it is not possible to predict what level of Alert increase may be seen.'

4. Business Requirements

Business Requirements	
Ref.	**Requirement**
1	An Over the Air (OTA) firmware update to an Electricity Smart Metering Equipment (ESME) or Communications Hub (CH) currently installed will not result in a Power Outage Alert (AD1 Alert) being sent to the Network Operator

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

5. DCC Proposed Solution

The DCC Products Team have investigated the issue and initially provided three Proposed Solutions for the SEC Working Group to evaluate. The solution option chosen by the Working Group is as below:

- **Solution 3 –** Data Service Provider (DSP) to filter Alerts. If the DSP knows SR11.3 was sent to a particular ESME by the associated CH Global Unique Identifier (GUID), they may choose to not forward any AD1 Alerts for a given timeframe (30 minutes suggested).
    - SECAS comments – filtering would suppress real power outages during this time. SR11.3 can be future dated and be executed within 30 days. This means that the DCC would have to extract the activation date, record it and then start a "suppress the AD1 Alert time window" at the activation time. This is a complex solution that does not necessary address the issue as the Alerts are still generated.

The Working Group has agreed that of the three solutions put forward, this solution was the most effective, with the Proposer investigating two variations. The first, where the AD1 is supressed at DSP level as part of the OTA firmware update, and the second, where the DCC could create a new DCC Alert to be forwarded to the DNO to pair with the AD1 already received.

The Proposer has sought feedback through the DNO Issues Group (DIG). The general consensus is that DNOs would prefer to receive no Alert at all in this scenario. SECAS subsequently discussed the solution and business requirements with the DSP who stated that they will need to be made aware of the Device model numbers and firmware versions in order to apply the required filtration, as opposed to being aware of the Global Unique Identifier (GUID).

6. Recommendations

The TABASC is requested to:

- **NOTE** the contents of this paper;
- **CONSIDER** the issue identified;
- **PROVIDE COMMENTS** on the business case for the modification; and
- **AGREE** the Proposed Solution addresses the issue effectively and should be progressed.

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SECAS Team

25 March 2021

Attachments:

Appendix A: MP102B Modification Report

Appendix B: MP102B business requirements