Data Communications Company

SEC Modification Proposal, SECMP0122

Operational Metrics

Preliminary Impact Assessment (PIA)

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1 Document History

1.1 Revision History

Revision Date	Revision	Summary of Changes
20/05/2020	0.2	Initial version, internal DCC review
28/05/2020	0.5	Completed internal DCC review

1.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP122 Business Requirements v1.0	SECAS	22/05/2020
2	MP122 Preliminary Assessment Request	SECAS	14/05/2020
3	OPSG OMR Report Final	OPSG	12/05/2020x`

References are shown in this format, [1].

1.3 Document Information

The Proposer for this Modification is Gemma Slaney from Western Power Distribution. The original proposal was submitted on 24th March 2020.

The Preliminary Impact Assessment was requested of DCC on 18th May 2020 and was submitted on 28th May 2020.

Both the Business Requirements and specific measures and indicators are included from document [1] to allow a direct comparison with the proposed solution.

2 Context and Requirements

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

The context, and issue statement, and requirements following have been provided by SECAS and the Proposer.

2.1 Context

Issues with transparency of reporting and relevance of the measures contained within the Data Communications Company (DCC) Performance Measurement Report (PMR) have arisen. In its monthly review of the PMR, the Operations Group has found it increasingly difficult to report to the Smart Energy Code (SEC) Panel on the issues within the report.

As a result of the issues encountered by the Operations Group, the Operational Metrics Review (OMR) was undertaken to better understand the PMR measures, consider amendments and recommendations of new performance indicators.

Through workshops and surveys of Users, it is clear that Users want to see reporting that reflects the business processes that the DCC supports, for example, Installation and Commissioning, Billing, and Prepayment top up.

The OPSG OMR Report [3] which is included in Appendix B: Supporting Information, outlines the findings of the Operational Metrics Review, commissioned by the Operations Sub-Group (OPSG), to identify improvements in the metrics used to measure the DCC service. The need for the review was identified following issues raised by the OPSG in relation to the monthly Performance Measurement Report (PMR).

2.2 Operational Metrics Review

In October 2019, work commenced on the Operations Group's Operational Metrics Review project to identify improvements in the metrics used to measure the DCC service. The need for the review was identified following issues raised by the Operations Group in relation to the monthly PMR produced by the DCC.

The PMR provides details of the Code Performance Service Levels achieved as set out in SEC Sections H13.1, L8.6 and D11.3 and the Service Provider Performance Measures specified in the Reported List of Service Provider Performance Measures document1.

The purpose of the Operational Metrics Review was to identify improvements in the set of operational metrics defined in the SEC for the measurement of the delivery of DCC Services. The improvements reflect User requirements and priorities. The review was resourced and managed by the Smart Energy Code Administrator and Secretariat (SECAS) and was conducted between October 2019 and March 2020.

Ofgem has been engaged throughout the review and is currently reviewing its Operational Performance Regime (OPR) structure. The aim of the Ofgem review is to ensure incentives placed on the DCC are adequate and effective, and therefore the outcomes of this project will help to ensure that the most appropriate subset of SEC defined measures feed into the OPR.

2.3 Report Recommendations

The OMR Report recommended that the DCC Operational Performance Reporting is addressed for the following areas:

- Report and measure service performance by User business processes using Service Request Variants.
- A measure of end to end DCC Service Availability across the DCC environment reported by Communication Service Provider (CSP) region.
- A change to the production of the PMR to improve the timeliness of production of the PMR, to ensure the PMR remains operationally relevant to Users.
- Changes or additions to Smart Metering Equipment Technical Specifications (SMETS) 2 arrangements for the PMR are, where appropriate, taken forward for SMETS1. This would ensure consistency across SMETS Device types and make sure that reports are focussed on outcomes, reflective of the experience of Users at an industry reported level.
- A change be made to CPM5 to report resolution times of Incidents (Category 3, 4 and 5) Individually per Reporting Period.

Another option to be investigated for this proposal are to move the performance measures outside of the SEC into a defined document that is controlled by the Operations Group. In addition, trialling of new metrics by the DCC should be conducted in parallel with this proposal to provide assurance that performance measures are made fit for purpose prior to them being adopted.

2.4 Business Requirements for this Modification

This section contains the definitions, considerations and assumptions for each business requirement as provided by the Proposer and SECAS.

Term	Definition
Measure	Is something that the DCC is responsible for providing a level of service for, and against which targets for DCC performance can be set.
Indicator	Is something the DCC is not accountable for but that provides a KPI that may be of value or use to the industry but cannot have a target attributed to it.

Table 1: General Terms and Definitions Used in this Document

The following requirements are based upon the recommendations made by the OMR, specifically the recommendations that require modifications to the Smart Energy Code (SEC). For more information on each of these requirements, refer to the specified sections of the OMR:

Req.	High Level Business Requirement	OMR Section
1	The DCC will report and measure service performance for User business processes using Service Reference Variants (SRVs) to measure actual performance each month per business process	3.3

2	The DCC shall add specific outcome-based measures to the Performance Measurement Report (PMR) to provide a Measure of performance as well as Indicators on the success of the key business processes	3.4
3	The DCC will measure end to end service availability across the DCC environment and report this by Communication Services Provider (CSP) region	3.5
4	The DCC will measure end to end service availability across the DCC environment and report this by Communication Services Provider (CSP) region.	4.7
5	In relation to Code Performance Measure (CPM) 5, the DCC will improve transparency in the reporting provided for incident Categories 3, 4 and 5	4.2

Table 2: Business Requirements for SECMP0122

Requirement 1: Report and measure service performance for User business processes using SRVs

2.3.1 Rate, Speed, Volume and Payload (RSVP)

Rate, Speed, Volume and Payload (RSVP) as described in section 2.3.1 and following in document [1], will be used as an indicator of performance for identified key User business processes. The RSVP metric will measure the relevant SRVs, service responses, acknowledgements and Alerts processing times within the DCC Total Systems. Each element of RSVP Is defined as follows.

Term	Definition
Rate	The sample period over which the performance is measured. For the purposes of the PMR the rate will be either daily or monthly. A daily measure provides the level of granularity required to capture service degradation or outages that impact a User's business process. A monthly measure will provide a higher-level executive view of service performance.
Speed	A measure of the Round Trip Time (RTT) for an SRV or group of SRVs measured within the rate period. The RTT is measured from receipt of the SRV from the User, to sending a Service Response to the User, and includes time spent within the HAN. Speed should be measured as an average (mean) as well as a median, as an average can be skewed by extremely large or small values. The OMR acknowledges that measuring RTT excluding the HAN would provide a more useful measure of DCC performance but introduces a number of challenges as this is not currently a technical capability of the system. However, an interim solution would be to calculate a response time using the CSP test message average response time, added to the DSP measured response time for the SRV. This time should be reported and plotted alongside the RTT. This solution is dependent on the CSP test message issues raised in section 3.2.5 of the OMR being addressed.

Volume	The total number of Service Requests or group of SRVs processed by the DCC Total System within the period.
Payload	The success or failure of the Service Request within the period. A failure is recorded when a Service Response contains an Error Response Code relating to a communications failure or timeout (E201 or E212), or a subsequent failure alert code

Table 3: Rate, Speed, Volume, Payload Definitions

2.3.2 Business Process and the Applicable SRVs

The performance of a business process including applicable SRVs as shown below will depend on whether the SRV relates to a Smart Metering Equipment Specifications (SMETS)1 or SMETS2+ Device and should therefore be reported on separately. Not all SRVs are applicable for SMETS1.

Table 1: Business processes and Applicable SRVs	
Business Process	**Common Service Reference Variants**
Install and Commission ESME GSME CH	SR8.11 'Update HAN Device Log' SR6.21 'Request Handover of DCC Controlled Device' (Update Supplier Certificates) (n/a) SR8.1.1 'Commission Device SR' SR8.7.2. 'Join Service' (Join GPF with GSME) SR6.20.1 'Set Device Configuration' (Import MPxN) (n/a) SR1.1.1 'Update Import Tariff' (Primary Element) SR6.8 'Update Device Configuration' (Billing Calendar) SR8.14.1 'Communications Hub Status Update Install Success' (n/a)
Change of Supplier (Gain)	SR6.23 'Updated Supplier Security Certificate Credentials Supplier Certificates' SR1.1.1 'Updated Import Tariff' (Primary Element) SR6.8 'Update Device Configuration' (Billing Calendar)
Change of Tenancy	SR3.2. Restrict Access for Change of Tenancy SR3.5. Disable Privacy PIN SR1.1.1. Update Import Tariff (Primary Element) – Update Tariff & Price SR1.6. Update Payment Mode
Tariff Updates ESME GSME	SR1.1.1 'Update Import Tariff' (Primary Element)
Pre-Payment Top Up Device Remotely	SR2.2 'Top Up Device' (Update Balance with positive value)
Security and Key Management Device Certificate Update	SR6.15.2 'Update Security Credential' (Device) – Credential Type = Digital Signature (n/a) SR6.15.2 'Update Security Credential' (Device) – Credential Type = Key Agreement Key (n/a)
In Life Device Management Update Device Change of Mode CR – PP Update Firmware Activate Firmware	SR2.1 'Update Prepay Configuration' SR1.6 'Update Payment Mode' (Payment Mode = Prepayment) SR1.1.1 'Update Import Tariff' (Primary Element) SR11.1 'Update Firmware'. ***Note:*** *In respect of SMETS2+ Devices the DCC must ensure that the associated firmware update has been delivered to all relevant Communications Hub Functions within 5 days of receipt of the Service Request.* SR11.3 'Activate Firmware' (Individual SR for each GUID for firmware activation). ***Note:*** *SMETS1 5day Target Response Time (TRT).*
Logistics CH Ordering and Returns	SR8.14.3. – Communications Hub Status Update – Fault Return (n/a) SR8.14.4. – Communications Hub Status Update – No Fault Return
Distribution Networks Post I&C Activity	SR6.15.1 'Update Security Credentials' (Update Network Operator Certificates) SR 6.5 'Update Device Configuration' (Voltage) SR6.22 'Configure Alert Behaviour' (Update ENO Alter Configuration) (n/a)
Alerts Management	AD1 Power Outage Event 8F35 Supply Outage Restored 8F36 Supply Outage Restored – Outage >= 3 minutes

Figure 1: Proposed Mapping of SRVs to Business Processes

Note that DCC will evaluate the allocation of SRVs against the business processes as part of the system development, and have already raised concerns about specific processes varying across the Service Users.

The RSVP metric shall be reported within the PMR and plotted using a line graph representation with daily data points. The SRVs shall also be reported at a monthly level to provide a summary of performance over the period. The summary will calculate performance of identified SRVs to provide a representative metric for the service for the business process. The summary will include both Indicators and Measures as defined below. The measures are to be reported for SMETS1 and by region for SMETS2+ devices.

The following monthly metrics are to be recorded and reported within the PMR:

- An Indicator of the Monthly Average (Mean) and Median RTT including time spent within the Home Area Network (HAN). The Median is recommended because, when compared to the average/mean, this measure is less likely to be skewed by extremely large or small numbers and therefore provides a better idea of the typical response time.

- An Indicator of the range of RTT values measured within the month to show the longest and slowest response time recorded.

- A Measure of the percentage of responses delivered within the Target Response Time (TRT) is calculated by including the response time for all Service Requests that compose a business process. For example, the Install and Commission process will be represented by the seven common SRVs that make up the SMETS2 Install and Commission process for Electricity Smart Metering Equipment (ESME) Devices[1]. In the case of Install and Commission, the TRT target should also be provided for Gas Smart Metering Equipment (GSME) Devices. The TRT has the meaning given to that expression in SEC Section H3.14 'Target Response Times'. Targets are those defined in SEC Appendix E 'DCC User Interface Services Schedule'.

- An indicator of the total number (volume) of SRV requests recorded for the period.

- An Indicator of the percentage of SRVs that failed to be delivered due to a communications failure or timeout (E20 or E21) or a subsequent failure alert code (N12 or N13).

[1] DCC has identified risks and concerns associated particularly in respect of the variability of the Install and Commission across Service Users.

An illustrative example of these measures is shown below.

Table 2: Prepayment – Top Up Device Remotely				
Monthly Performance Measure	Region A	Region B	Region C	SMETS1
Average RTT	29	15	33	12
Median RTT	26	15	35	11
Range (Shortest)(Longest)	(4)(200)	(1)(20)	(20)(49)	(10)(20)
Percentage of Service Responses delivered within the Target Response Time	97%	99%	95%	99%
Volumes	100K	90K	110K	5K
Percentage of Service Requests that failed to be delivered	2%	9%	4%	10%

Requirement 2: Add specific outcome-based measures to the PMR to provide a Measure of performance as well as Indicators on the success of the key business processes

The following section define a set of Measures and Indicators for each of the identified business processes.

These metrics are to be made available to Users in addition to the RSVP metrics defined within the previous section 'requirement 1'. The column labelled "M/I" indicates whether the definition is for a Measure or an Indicator.

2.4.1 Install and Commission

ID	Requirement	M/I	Definition
IC1	The PMR must be amended to provide a greater level of visibility for the time taken for the DCC Total System for the install and commission process	M	Measure the Response Times of the common Service Requests and report the percentage that failed to meet the Target Response Times.
		I	Measure daily total volume of successful and failed meter installations broken down by Comms Hub (CH)/ESME/GSME and Region.
		I	Provide information on the total number of installs for the period against the predicted number of installs. The predicted installations will be based on historic DCC recorded installation volumes data and therefore may only be used for informational purposes.
		I	Provide information on the number of Install and Commission versus Install and Leave.

IC2	The PMR must be amended to provide information on the impact of service degradation and outage on the User.	I	This must include the following indicator - The DCC uses predictive modelling techniques to record and predict behaviour of meter installations in near real-time. The deviation from the norm provides a good indicator of degradation in service and the volume of messages provides a proxy measure of impact on Users. In addition, Sev1 and Sev2 incident data can be combined to provide a more accurate reflection of the User's experience.

2.4.2 Change of Supplier (CoS)

ID	Requirement	M/I	Definition
CoS1	Provide a measure of the success of the Change of Supplier Process.	M	Measure the percentage of successful SRV6.23 SRVs delivered. Where the response erroneously reports a failure, the presence of subsequent critical and non-critical SRs sent by the gaining supplier will be used as an indicator of success.
		I	Provide the measure above by device type and region.
		I	Provide information on the reason for failure e.g. where a CoS database becomes unavailable or other Service Provider issue materialises

2.4.3 Billing

ID	Requirement	M/I	Definition
B1	Provide a measure of the success of the scheduling of meter reads and delivery of meter reads.	M	Measure the percentage of successful SRV5.1 SRVs successfully delivered.
		M	Measure success of DSP to deliver read (or failure response) within 24hrs of start of execution time.
B2	Provide a measure of the success of on demand meter reads.	I	Measure the percentage of successful SRV4.6.1 SRVs successfully delivered

2.4.4 Prepayment

ID	Requirement	M/I	Definition
PP1	Provide a measure of the success of topping up a device remotely.	M	Measure the percentage of successful SRV2.2 SRVs successfully delivered to the devices. Include a measure by device type and region.
		I	Provide information on the volumes of success and failures within the period.
		I	Use non-communicating devices identified during the meter read process as a proxy for gauging estate health.
		I	Provide a table showing the percentage attempts to top up before success. Provide metric for the first and second attempts and the percentage of failures. Where failure is above 5%, provide further details on the reason for the failure

2.4.5 Update Device Firmware

ID	Requirement	M/I	Definition
DF1	Provide a measure of the success of delivering the device image to the Communications Hub.	M	Measure the percentage of successful SRV11.1 SRVs firmware payload images successfully delivered to the CH.
DF2	Provide information of the success of transferring the device images from CH to the device.	I	Measure device image verification success (0x8F72) and verification failures (0x8F1c) to provide information on the percentage of images that are successfully transferred from the CH to the device. Record devices that did not issue an alert after the SLA has elapsed to identify failure to transfer from CH to the device.
DF3	Provide information on successful activation of device firmware image.	I	Measure the percentage of success and failure responses to the SRV11.3 Activate Firmware request.

2.4.6 Update Comms Hub Firmware

ID	Requirement	M/I	Definition
CH1	Provide an indicator of the success of delivering CH firmware image to the Communications Hub.	I	Measure the percentage of successful CH firmware payload images successfully delivered to the CH
CH2	Provide an indicator of the successful activation of the CH firmware image.	I	Measure the percentage of successful CH firmware image activations.

2.4.7 Alerts

ID	Requirement	M/I	Definition
A1	Provide a measure of the success of delivering alerts.	M	Measure the percentage of alerts successfully delivered within required SLA time (60 seconds). For alerts impacted by throttling, i.e. during an alert storm, this will measure all alerts sent to the User.
		I	Measure the individual alerts that fail to be delivered within the SLA time to identify the type of alert impacting overall performance.

Requirement 3: Measure end to end Service Availability across the DCC environment and report this by CSP region

This requirement refers to the combination of each of the following DCC interface and supporting sub-systems as a 'DCC Service':

- the DCC User Interface
- the Registration Data Interface
- the Smart Metering Key Infrastructure (SMKI) Repository Interface
- the SMKI Services Interfaces
- the Self-Service Interface (SSI)

Service availability shall be measured as a percentage for all the above Services.

Whilst this approach accounts for overall service availability of each Service, it would not be reflective of instances in which the Service is partially unavailable.

Those key business processes impacted by partial availability shall be reported alongside the metrics and indicators for service availability of a particular Service. An illustrative example of this is provided in Table 3 below. Note that the Service Level percentages reported for each key business process are an indicator, and would quantify the time, during the reporting period, in

which the DCC has the capability to successfully process and deliver a particular Service Request that makes up a particular business process, as defined in Table 1 of this document.

In addition to the considerations above, the DCC is asked to report on how much cost and effort will be required to include these elements in the solution.

Monthly view of end-to-end Service availability	A monthly view of end-to-end service availability for each of the Services described above is reported on as a single percentage figure, as well as depicted as a line graph across the days of the month. This will enable a higher level of granularity and easier identification of potential issues that might have impacted Users throughout the reported period. As stated before, this measure for end-to-end availability should include sub-systems linked to each individual interface. If a particular sub-system (i.e. server) is responsible for supporting multiple interfaces, and this sub-system experiences an outage, then the availability measure for each of the affected Services should be impacted and reflected in the monthly measure.
End-to-end Service availability by CSP region	The view for service availability, where relevant, is split by CSP regions, for better correlation with Users operational experience.
Reporting Service availability by time of day	Time of day is considered when measuring and reporting on service availability for any particular Service, as this can have a direct impact on User's operations. The OMR suggests a split (Monday to Friday) between hours where installations are more prominent (08:00-20:00) and hours where other business processes (i.e. CoS) take place (20:00-08:00). With regards to weekends, the OMR recommends Saturdays to be split between 08:00-12:00 (on-site activities are still performed, i.e. installations) and 12:00 to 08:00, and Sundays are generally considered as days of on-site operations inactivity.
Measuring Service downtime	Service downtime for each interface and its supporting system components is measured in minutes, and then expressed in hours over the reporting period (e.g. 235 minutes of unavailability in a month would equate to a total of 3.91 hours). The OMR recommends that from the total time of service unavailability (expressed in the formula as the Unplanned Downtime), the percentage of overall availability for a particular Service is calculated as follows: $$Service\ Availability = \frac{Uptime - Unplanned\ Downtime}{Uptime}\ [\%],$$ $$where\ Uptime = Planned\ Uptime\ (total\ time\ in\ the\ month) - Planned\ Maintenance$$ Additionally, as each Service provided by the DCC is made up of an interface and multiple supporting sub-systems, a particular Service is to be considered available (therefore contributing to the argument 'Uptime' in the formula) only when all of its supporting sub-systems are available, and is to be considered unavailable (and

	therefore contributing to the argument 'Unplanned Downtime' in the formula) otherwise. Note: In accordance with SEC Section H8, the DCC "shall (insofar as is reasonably practicable) undertake Maintenance of the DCC Systems in such a way as to avoid any disruption to the provision of the Services (or any part of them)." Additionally, the DCC shall limit Planned Maintenance of the DCC Systems generally to not more than six hours in any month (including maintenance of the SSI). Given this allowance, the OMR acknowledges that Planned Maintenance, complying with Section H8.4 of the SEC, should be excluded from, and not impact, the calculation for Service Availability defined in the formula above.
Measuring Service reliability	The DCC shall produce reliability measures for each of the interfaces described above and reported alongside the figures for service availability. Recommended measures for reliability of a system are reported below: • Total Number of Incidents (category 1 to 5) across the reporting period. Additional Indicators to inform Users on the reliability of the DCC services would include the overall number of Category 1 & 2 incidents per Reporting Period (the OMR notes that the DCC already provides summary information about Category 1 & 2 Major Incidents to Users voluntarily). The OMR also believes the PMR should include the total volume of Category 3, 4 & 5 Incidents in the Reporting Period, where the Incident resolution is attributed to the DCC as the Responsible Party. • Average amount of downtime per event (related to the Mean Time To Repair (MTTR) measure, which is defined as total maintenance time divided by the total number of repairs). • Mean Time Between Failures (MTBF), calculated across the reporting period, as operating time (hours) divided by the total number of failures. An illustrative example of the recommended Measures (M) and Indicators (I) proposed by the OMR for the reporting of service availability and reliability of some of the interfaces is provided below:

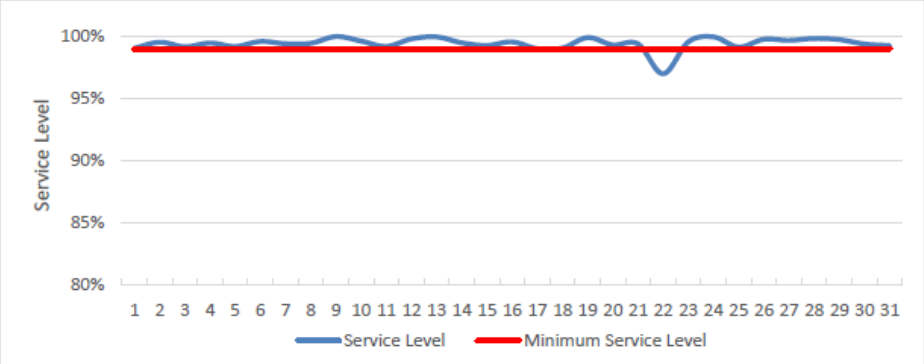
Table 3: Service Availability Measures

Service Availability DCC User Interface – Service Level — **M/I**

Monthly Performance Measure	Previous Service Level	Service Level	Target Service Level	Minimum Service Level	
Service Availability – DCC User Interface	99.95%	99.40%	99.95%	99.00%	M

Service Availability DCC User Interface – Monthly View

I



Service Availability DCC User Interface – Time of Day Breakdown

Monthly Performance Measure	Hours of Operational Activity	Hours of Operational Inactivity	
Service Availability – DCC User Interface	98.80%	100.00%	I

Service Availability DCC User Interface – Service Availability by Region*

*N/A, regional split not applicable for this interface

Monthly Performance Measure	Region A	Region B	Region C	
Service Availability – DCC User Interface	99.00%	99.80%	99.40%	I

Requirement 4: Reduce the time it takes to create the PMR to within 10 Working Days from the end of the measurement reporting period

The SEC states that the DCC must create the PMR within 25 Working Days. However, the DCC shall reduce the time it takes to create the PMR to within 10 Working Days from the end of the measurement reporting period. This is to ensure the PMR remains operationally relevant to Users.

The effect would be that, depending on bank holidays and month end falling on Working Days, the report could be reviewed by the Operations Group the month following the end of the reporting period. For example, a report for the month of February could be reviewed at the end of March at the Operations Group report review meeting.

Requirement 5: In relation to CPM 5, the DCC will improve transparency in the reporting provided for incident Categories 3, 4 and 5

Feedback from Distribution Network Operators (DNO) highlighted a lack of transparency in the reporting of Incident Categories 3, 4 & 5 where the DCC is the responsible Party for the resolution of the incident in accordance with the SEC Appendix AG 'Incident Management Policy'.

CPM5 does not split out the resolution of these per Incident Category. Therefore, in order to improve transparency and confidence in the reporting provided for incident Categories 3, 4 and 5,

CPM5 is to be amended to show individual incident resolution times for each incident category. This would be supplemented by further Indicators detailing:

- the number of Incidents per Category 3, 4 and 5 raised in the reporting period
- those that met the Initial Target Response Time
- those that met the Target Resolution Time

3 Description of Solution

3.1 Introduction to the Technical Operations Centre

The DCC Technical Operations Centre is a 24x7x365 capability with an in-depth technical understanding of the DCC systems, process and technology to ensure the DCC service "lights stay on". This is done by Assuring, Controlling, Monitoring and Informing the DCC network.

The TOC is staffed 24 x 7 x 365 by dedicated DCC sourced system experts and a core network monitoring team and is located at the DCC Brabazon site. The TOC staff are technical experts that understand the DCC systems, processes and technology in sufficient level of detail to be able to provide a 3rd level support capability.

The TOC solution has four key objectives:

1. Service Visualisation of data sources in near real time to provide an adaptable and configurable Operations Management dashboard.
2. Operations Analytics and/ or intelligence allowing highly accurate monitoring of key DCC KPI's across all data sources, identify anomalies and generate intelligent insights through correlation/ trend analysis – and other statistical analysis models - of data sources to automate root cause identification and provide other useful insights to facilitate DCC in their operational objectives.
3. Capability for proactive alerting of operational metrics, using appropriate algorithms/ logic, that can be triggered through use of configurable thresholds and detection of anomalous behaviour, allowing DCC to pre-emptively address possible incidents.
4. Summary of key infrastructure availability across DCC supply base to provide a high-level view of service availability, subject to appropriate security constraints.

The DCC TOC will be responsible for the design, development, implementation and maintenance of the solution for this Modification.

3.2 Requirements Review and Solution Overview

The DCC have reviewed the requirements and details including report mockups as provided in documents [1] and [3]. The Solution will attempt to implement the OMR proposals and recommendations, but we would like to arrange workshops as part of the Full Impact Assessment to look at the detailed methodology of worked examples and to seek industry agreement about whether it best delivers on the intention behind the recommendations. Where indicated in the following sections, this detailed analysis will be carried out at the start of the Full Impact Assessment and the Implementation phase, while developing detailed business requirements.

DCC have noted responses for each requirement, as summarised following.

3.2.1 Requirement 1

For all the metrics identified, it should be possible to provide **RSVP** metrics. Grouping of SRVs add complexity that comes with a computational and storage overhead.

For the speed category it should be noted that although DCC cannot remove the HAN processing time from RTT, DCC can provide metrics for SRVs that have been addressed to the CH or Gas Proxy Function (GPF), allowing a proxy metric to be delivered.

The payload category will look for a successful Service Request, but it must be noted that there are different types of failures, many of which are valid failures for the DCC, such as authentication errors. This is one area where further detailed requirements will need to be established.

For **Business processes and applicable SRVs,** it should be noted that there is no guaranteed way to, for example, to bucket up SR1.1.1 service requests into those used in the Install and Commission (I&C) process and those used in Change of Supply or Change of Tenancy. An algorithm can be put into place that has a high degree of accuracy, but this will need knowledge of a specific user's I&C orchestration and other factors. It is simpler to report all SR1.1.1s and use the same metric across all business processes. This will need further discussion, and holds for all the business processes listed.

Further to the points raised above DCC believes that key management and firmware distribution measures and indicators will need further detailed discussions about what is achievable and what can be done with the current data that still meets the requirements. This will be carried out during the FIA stage for this Modification.

For both the **RSVP Data representation of SRVs** and the **Monthly PMR metrics**, DCC believes this is achievable within the limitations of what the DCC can report.

3.2.2 Requirement 2

This responses for this requirement have been broken down into sections with responses for each set of metrics and indicators.

Section 2.4.1 Install and Commission	DCC can work alongside users to audit their I&C process, but this is dependent on users sharing their orchestrations and working with DCC on the algorithm. One approach to find an optimal option is that this section of reporting is limited to selected users, another would be identify common SRs and common processes to apply to all users. This is a complex piece of reporting and will need design decisions from the Business Proposer and Working Group alongside a dedicated DCC resource to identify the best way forward.
Section 2.4.2 Change of Supplier	DCC has existing CoS reporting and this can be repurposed to this area of reporting. DCC is currently looking at the requirements across industry for this reporting. DCC suggests a workshop to refine the detailed requirements needed for this piece of reporting, but believes it is fully achievable.
Section 2.4.3 Billing	DCC suggests a workshop to determine the detailed requirements and formats needed for this piece of reporting, but believes it is fully achievable
Section 2.4.4 Prepayment	DCC suggests a workshop to determine the detailed requirements needed for this piece of reporting, but believes it is fully achievable

Section 2.4.5 Update Device Firmware	The end to end firmware journey is a complex reporting issue. DCC can apply fuzzy logic to the data and create reporting metrics that are valid, but DCC recommend a workshop to extract the detailed requirements within the limitations of the data set available.
Section 2.4.6 Update CH Firmware	DCC does not have data available to report on delivering firmware images to the CHs. This data resides with the CSPs, and hence it would require significant CSP changes for DCC TOC to access this data. However DCC can report on activation of the image. The latter approach has been approved as a way forwards.
Section 2.4.7 Alerts	DCC suggests a workshop to determine the detailed requirements and formats needed for this piece of reporting, but it is fully achievable

3.2.3 Requirement 3

By completing a solution for Requirements 1 and 2, which include the ability to measure RSVP performance, the DCC can split the data by CSP. The solution approach will be to identify a *lack* of activity across parts of the network, which will denote an outage or a reduction in service availability. The alternative approach, which would be to send "dummy" Service Requests across the networks would both add load to the network, and require constant monitoring, while not helping to localize or diagnose any potential network outages. Note that the OMR report also expressed a preference to move away from using Test messages to measure performance.

For non-SRV transactional services, DCC will determine the best available measures and indicators.

It is not possible to include specific costs for each of the measures as requested in the requirements on page 14. General costs for supporting the requirement have been included, but the solution identified above of not using test messages will be analysed against each of the requirements for feasibility during the Full Impact Assessment.

3.2.4 Requirement 4

if DCC use the existing data available to the DCC, then the DCC must change the contract with all Service Providers to reduce the time for the CSPs to forward this data. There are likely to be contract change costs for this (not included in ROM). In addition contract changes may incur significant costs, and typically take at least 6 months to negotiate and implement, so this could be a concern for this requirement.

The feasibility and associated costs for this requirement will be determined as part of the Full Impact Assessment.

3.2.5 Requirement 5

The current monthly Performance Measurement Report fulfils the request to provide the breakdown of the number of Category 3, 4 and 5 incidents closed in the period, and the number that achieve the SLA (Target Resolution Time).

DCC considers it appropriate to report the Incidents closed in period instead of opened, as this ensures that all Incidents raised are reported on. Otherwise, if an Incident is raised and not closed in period, it would not appear in a future report. It also means that Incidents raised towards the end of the reporting period and are not resolved but still within SLA are accurately reported on.

With regards to providing an indicator on whether Incidents are meeting the Target Response Time, this would require configuration of reporting tools. This would be complex, as the way Incidents are raised and responded to depends on where the Incident is allocated for action. It would require business process changes for the DCC, and integration with the Service Provider systems. We note that this is only one point in the incident lifecycle that is used to ensure incidents are progressing within a multi service provider function.

The workshops proposed can look at this in further detail to best understand the Service User need for this measure and related indicators.

3.3 Solution Constraints and Changes

Although working within the constraints of the current solution should involve no commercial change to the DCC Solution, the TOC will need to create data structures and processes to enable the efficient, consistent and reliable reporting of the metrics requested. Some metrics are readily available, although not necessarily in the correct format, some metrics will need to be derived and there are some that are not possible. These will be reviewed as part of the Full Impact Assessment and Implementation stages.

3.4 Working Methodology

It is anticipated the reporting will be delivered by the DCC TOC via an iterative delivery mechanism, whereby a Minimum Viable Product (MVP) will be available in the first release in the Implementation phase and further functionality can be delivered in a fast and frequent continuous delivery mechanism until the final product is complete.

During the Full Impact Assessment and whilst requirement gathering, and development and delivery cycles are running, the DCC will host workshops and walkthroughs including selected Service Users. These workshops will aim to validate the proposals in the OMR in terms of the viability of implementing the recommendations, to refine the design further, and to enable fast delivery of new requirements and improvements. DCC would use the mock ups of reports provided in the OMR [5] as a starting point representing how users want reports presented, and these would form the basis for wireframe reports generated in the Full Impact Assessment and Implementation phases.

4 Impact on DCC Systems, Processes and People

As defined this change is confined to the DCC TOC, with no expected changes impacting SMETS1 or SMETS2 Service Providers, and the full range of activities from design, through development, testing, and implementation to maintain the system as Business as Usual would be performed by DCC in-house contractors and permanent staff.

Impacts to Service Design, Service Management and other Application Support functions are not included in this PIA, but will be evaluated and added to the Full Impact Assessment.

4.1 Security Impact

The implementation will be security assured during the implementation phase. This includes reviewing designs, test artefacts and providing consultancy to the implementation and test teams.

4.2 Technical Specifications

No changes to DUIS, GBCS, or any other Technical Specification is expected.

4.3 Infrastructure Impact

To meets the requirements stated above will require additional infrastructure, specifically storage and processing power for the TOC system. These costs will be determined as part of the Full Impact Assessment, and will reflect the complexity and other properties of the solution.

It should be noted that the solution as proposed should not add noticeable traffic or processing to the Smart Metering System or network.

4.4 Application Support

Impacts to Service Design, Service Management and other Application Support functions are likely, and it is expected that further TOC staffing will be required to support the changes in this Modification. These costs will be determined as part of the Full Impact Assessment, and will reflect the complexity and other properties of the solution.

4.5 Contract Changes

As noted previously, changes to implement Requirement 4, "Reduce the time it takes to create the PMR to within 10 Working Days", may require DCC to negotiate contract changes with the Communications Service Providers. For both the specific contracts and costs initial discussions will be undertaken during the Full Impact Assessment.

5 Implementation Approach and Timescales

A key factor in planning and delivering this Modification's implementation and release is that the changes are neither part of the Smart Metering System, nor do they impact any Technical Specifications, such that they can be implemented separate from the now-standard SEC Release dates. It should be noted that Requirement 4 may require some changes to Service Provider's internal systems, and this may have an impact on full system functionality becoming available, but this will be assessed in the FIA.

5.1 Testing and Acceptance

It is assumed that the change will be implemented and tested as a separate release, and will include testing iteratively during development. The development and testing will not follow the PIT, SIT, and UIT pattern associated with a "conventional" SEC Release, and will not require the testing services of the System Integrator or Communication Services Provider (CSP) beyond potential changes to CSP internal systems.

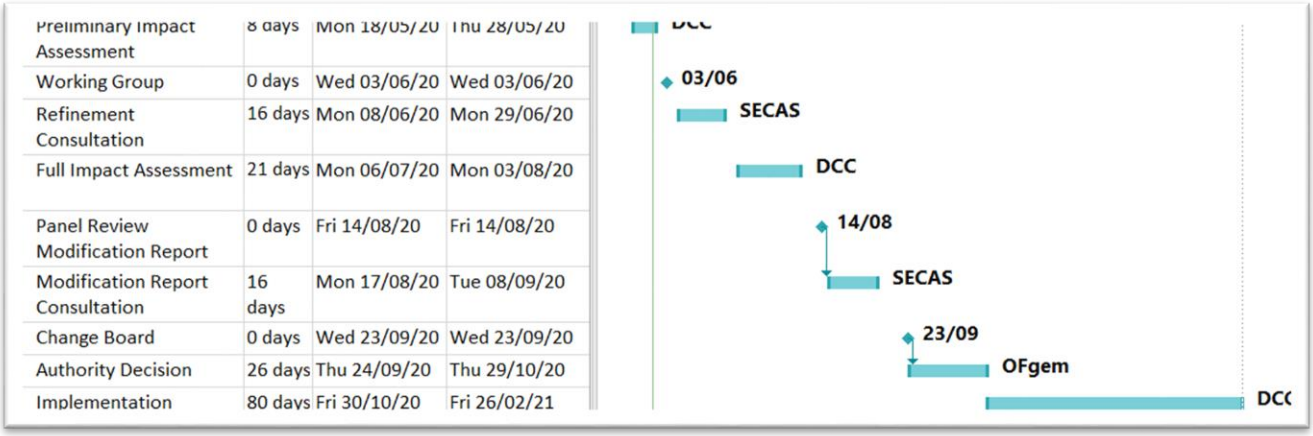
It is likely that selected Service Users would be engaged in the design, development, and test phases for this Modification. A full analysis of the testing methodology will be defined as part of the Full Impact Assessment.

5.2 Modification Development Timescales

The original plan for the Modification development and implementation was agreed with SECAS at the start of the modification process. The key dates and activities are as shown following.

Preliminary Impact Assessment	8 days	Mon 18/05/20	Thu 28/05/20		DCC
Working Group	0 days	Wed 03/06/20	Wed 03/06/20		Working Group
Refinement Consultation	16 days	Mon 08/06/20	Mon 29/06/20		SECAS
Full Impact Assessment	21 days	Mon 06/07/20	Mon 03/08/20		DCC
Panel Review Modification Report	0 days	Fri 14/08/20	Fri 14/08/20		SECAS
Modification Report Consultation	16 days	Mon 17/08/20	Tue 08/09/20	1(	SECAS
Change Board	0 days	Wed 23/09/20	Wed 23/09/20		SECAS
Authority Decision	26 days	Thu 24/09/20	Thu 29/10/20	1:	OFgem
Implementation	80 days	Fri 30/10/20	Fri 26/02/21		DCC

Figure 2: Timelines for Modification



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Authority Decision	26 days	Thu 24/09/20	Thu 29/10/20
Implementation	80 days	Fri 30/10/20	Fri 26/02/21

Figure 3: Gantt Chart of Modification Development Activities

Given the many areas where detailed requirements will need to be developed from the OMR [3], ideally through workshops involving DCC and key users as mentioned in section 3.2, we believe that the period for the FIA should be started earlier if possible, and lengthened to 30 days.

DCC also believe that the period of nearly 3 months between submitting the FIA and receiving the go ahead to start implementation, should be reduced significantly to give the DCC staff managing the Implementation phase enough time to hire staff, and to complete in time for the deployment at the end of February. Recruitment at DCC is expected to take one month, or 20 working days.

We believe that the Implementation could be completed quicker, but note the significant risk associated with hiring new staff, and the Christmas-New Year period when contract staff are typically furloughed has pushed the potential Implementation period to 80 days.

6 Costs and Charges

The table below details the cost of delivering the changes and Services required to implement this Modification Proposal.

The Rough Order of Magnitude cost (ROM) shown below describes indicative costs to implement the functional requirements as assumed above. The price is not an offer open to acceptance. It should be noted that the change has not been subject to the same level of analysis that would be performed as part of a Full Impact Assessment and as such there may be elements missing from the solution or the solution may be subject to a material change. As a result the final price may result in a variation.

6.1 Design, Build, and Testing Cost Impact

The table below details the cost of delivering the changes and Services required to implement this Modification. The scope of supply under this PIA includes design, development (build), testing within a selected TOC environment. Activities out of scope of this cost include Application Support, infrastructure improvements, and Service Provider contract changes.

£	Design, Build and Test
Operational Metrics	340,000

Based on the existing requirements, the fixed price cost for a Full Impact Assessment is **£51,190** and would be expected to be completed in 30 days. This duration is different from that agreed before the start of the PA activities, but DCC believes the workshops and contract evaluations will take longer than initially anticipated.

Appendix A: Glossary

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

.Acronym	Definition
CH	Communication Hub
CPM	Code Performance Measure
DCC	Data Communications Company
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
GBCS	Great Britain Companion Specification
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
I&C	Installation and Configuration
KPI	Key Performance Indicators
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
OMR	Operational Metrics Review
OPSG	Operations Sub-Group
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
PMM	Performance Measurement Methodology
PMR	Performance Measurement Report
ROM	Rough Order of Magnitude (cost)
RSVP	Rate, Speed, Volume, Payload, a measure of performance of SRVs
RTT	Round Trip Time
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SMETS	Smart Metering Equipment Technical Specification
SMKI	Smart Metering Key Infrastructure
SP	Service Provider
SR	Service Request
SRV	Service Request Variant
TRT	Target Response Time
TTO	Transition to Operations
UIT	User Integration Testing

Appendix B: Supporting Information

OPSG OMR Report Final.pdf

MP122 Requirement and RTM V0.25.xlsx