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MP176 'Customer Analytics Reporting'

Modification Report

Version 0.8

17 August 2022



About this document

This document is a Modification Report. It currently sets out the background, issue, and progression timetable for this modification, along with any relevant discussions, views and conclusions. This document will be updated as this modification progresses.

Contents

1. Summary.....	3
2. Issue.....	3
3. Solutions	4
4. Impacts	9
5. Costs	11
6. Implementation approach	12
7. Assessment of the proposal	12
8. Case for change.....	14
Appendix 1: Progression timetable	15
Appendix 2: Glossary	16

This document also has five annexes:

- **Annex A** contains the business requirements for the solution.
- **Annex B** contains the redlined changes to the Smart Energy Code (SEC) required to deliver the Proposed Solution.
- **Annex C** contains the full Data Communications Company (DCC) Impact Assessment response for the Proposed Solution.
- **Annex D** contains the DCC Customer Analytics Reporting guidance document.
- **Annex E** contains the DCC Preliminary Impact Assessment response for the Alternative Solution.

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1. Summary

This proposal has been raised by Easton Brown from the DCC.

The Smart Energy Code Administrator and Secretariat (SECAS) implemented [MP122A 'Operational Metrics'](#) in the February 2021 SEC Release, in order to increase the transparency and accuracy of the Performance Measurement Report (PMR). The PMR is a report produced by the DCC (in accordance with SEC Section H13.4) which sets out the Service Levels achieved in respect of a list of metrics (or Performance Measures) relating to Users' business processes, outlined in SEC Section H13.1A. This report is then provided to the Panel, the SEC Parties, and the Authority.

Following the implementation of MP122A, the DCC held workshops with SEC Parties which identified a need for additional metrics for reporting which are not currently listed in SEC Section H13.1A. The workshops also identified that for SEC Parties to drive performance improvements more effectively, they require a view of their own performance within each metric, set against anonymised performance data from their peers.

By extending the scope of the PMR to Device and Party levels, the DCC has identified significant variations in performance levels across DCC Users. MP176 aims to provide this same level of insight to DCC Users, to help them overcome these disparities by exposing the root causes.

The Proposed Solution is to mandate a standardised reporting suite which the DCC will provide to its Users in a static PDF/CSV file format. The Alternative Solution would deliver the same reporting but would also deliver the data via an interactive customer portal, allowing for more dynamic analysis.

This modification will impact the DCC and will indirectly impact Large Suppliers, Small Suppliers, Electricity Network Operators, and Other Users, as these Parties will receive the reporting but are not obligated to act on it. The cost of implementation for the Proposed Solution is currently estimated at £135,720 and is targeted for the June 2023 SEC Release. The Alternative Solution is currently estimated to cost £190,000 to implement. This will be progressed as a Self-Governance Modification.

2. Issue

What are the current arrangements?

Following the implementation of MP122A, the DCC is able to provide SEC Parties with an industry-wide level of reporting on the success or failure and Round Trip Times of Service Reference Variants (SRVs) relating to key customer business processes. The SRVs for which reporting is available are listed in SEC Section H13.1A.

What is the issue?

The current SEC reporting regime provides SEC Parties with an industry-wide level of reporting. This does not provide Parties with a view of their own performance, how they compare with other SEC Parties, or the ability to simply diagnose factors (Devices, Firmware, Geographic Location, Orchestration) that could be affecting their performance against key business processes.

Following implementation of MP122A, the DCC held workshops with DCC Users to understand if the PMR, while suitable for reporting on the overall health of the smart metering network, meets the reporting needs of individual Parties. These workshops returned the feedback that while the PMR provides an industry-wide view of performance, there is no way for the DCC or any individual SEC Party to view Party-specific performance within each metric. This reduces the ability of Users to drive improvement, and the ability of the DCC to assist them in doing so.

What is the impact this is having?

During the development of MP122, before it was split into MP122A and MP122B, the reporting requirements were broken down by SRV and Region. To better understand the shortcomings in performance, the DCC extended the reporting model to Device and Party levels, which revealed a significant disparity in performance levels between DCC Users across several key business processes. As not all SEC Parties have the reporting capabilities to assess their own performance against these key metrics, they have a reduced ability to drive improvement within their own businesses and in their interactions with the DCC. The DCC is also less able to assist them in doing so. This results in continued poor performance, and poor data quality, which can affect any other DCC Users those Parties interact with. The inability to identify areas of concern can lead to delays in industry processes and have financial and reputational costs across all Parties.

It is therefore the Proposer's view that a standardised performance report for all DCC Users should be provided by the DCC, and this should be mandated under the SEC. The Proposer believes that if this were provided as an elective service the Parties with the worst performance would have the lowest uptake, and the performance of all other Parties would continue to suffer as a result.

Impact on consumers

Doing nothing prevents DCC Users from identifying poor performance areas within their business processes and making any relevant improvements. The DCC is less able to support DCC Users in meeting their performance targets, negatively affecting the experience of the end consumer.

Implementing the proposal would give DCC Users and industry the insight to drive up overall performance for all components of the smart metering ecosystems.

3. Solutions

Proposed Solution

The Proposed Solution will mandate that the DCC delivers a standardised set of benchmarked reporting to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to enable them to diagnose reasons for poor performance so that they can take steps to address it.

This reporting will consist of the following categories:

- inventory;
- business process; and

- Alert reporting.

The content of these categories is outlined in greater detail below.

Inventory reporting

The DCC will provide inventory reporting identifying the User's Smart Metering estate for the following User Roles as a snapshot view for the end of the calendar month:

- Import Supplier;
- Export Supplier;
- Gas Supplier; and
- Electricity Distributor.

Inventory reporting will include:

- a bar graph for each Device Type, identifying volume of Device Models and firmware versions;
- a bar graph for each Device Model, showing a breakdown of the report recipient's firmware versions against the industry average and anonymised data for other Parties; and
- a data file identifying all data fields (defined in Annex D) against all Devices in the report recipient's metering estate.

Business process reporting

For each of the business processes and related SRVs defined in the table below, the DCC will provide separate graphs identifying:

- a measure of the report recipient's monthly average success/failure rates against anonymised data for other Users operating in the same User Role;
- a monthly view of Round Trip Time or Alert delivery time, identifying the report recipient's best, worst, mean, and median times against the same metrics at an industry level for other Users operating in the same User Role; and
- a breakdown of the report recipient's daily average success/failure rates and Round Trip Times against the industry average, split by Meter Type, Region and Smart Metering Equipment Technical Specifications (SMETS) version where relevant, and highlighting 'Category 1 & 2' Incidents. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.

Business processes and related SRVs to be reported on		
Business Process	Service Reference Variant	Description
Install and Commission	8.11	Update HAN Device Log
	6.21	Request Handover of DCC Controlled Device (Update Supplier Certificates)

Business processes and related SRVs to be reported on		
Business Process	Service Reference Variant	Description
	8.1.1	Commission Device
	8.7.2	Join Service (Join GPF with GSME)
	6.20.1	Set Device Configuration (Import MPxN)
	1.1.1	Update Import Tariff (Primary Element)
	6.8	Update Device Configuration (Billing Calendar)
	8.14.1	Communications Hub Status Update Install Success
	8.7.1	Join Service (Critical)
	No meter read received within 30 days of 8.14.1	
	Measure daily total volume of installs for the period against the predicted number of installs based upon historic install volumes	
	Measure daily total volume of Install and Commission (SRV 8.14.1) versus Install and Leave (SRV 8.14.2)	
Change of Supplier (Gain)	6.23	Update Security Credentials (CoS)
	1.1.1	Update Import Tariff (Primary Element)
	6.8	Update Device Configuration (Billing Calendar)
	Identification of whether there was a successful read within 30 days prior to CoS Gain	
	Identification of whether 8.14.1 or 8.14.2 was sent by old supplier prior to CoS Gain	
Change of Tenancy	3.2	Restrict Access for Change of Tenancy
Tariff Updates	1.1.1	Update Import Tariff (Primary Element)
	1.2.1	Update Price (Primary Element)
Prepayment	1.6	Update Payment Mode (Payment Mode = Prepayment)
	2.1	Update Prepay Configuration
	2.2	Top Up Device (Update Balance with positive value)
	2.3	Update Debt
Security and Key Management	6.15.2	Update Security Credential (Device) – Credential Type = Digital Signature
	6.15.2	Update Security Credential (Device) – Credential Type = Key Agreement
	6.17	Issue Security Credentials – Credential Type = Digital Signature
	6.17	Issue Security Credentials – Credential Type = Key Agreement
	6.21	Request Handover of DCC Controlled Device (Update Supplier Certificates) – other than use in Install and Commission process
	11.1	Update Firmware

Business processes and related SRVs to be reported on		
Business Process	Service Reference Variant	Description
Update Device 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 five days of receipt of the Service Request.
	11.3	Activate Firmware (Individual SR for each GUID for firmware activation) Note: SMETS1 five-day Target Response Time.
Logistics Communications Hub Ordering and Returns	8.14.3	Communications Hub Status Update – Fault Return
	8.14.4	Communications Hub Status Update – No Fault Return
Distribution Networks Post I&C Activity	6.15.1	Update Security Credentials (Update Network Operator Certificates)
	6.5	Update Device Configuration (Voltage)
	6.22	Configure Alert Behaviour (Update ENO Alter Configuration)
Meter Reads	4.6.1	Retrieve Import Daily Read Log
	4.6.2	Retrieve Export Daily Read Log
	4.8.1	Read Active Import Profile Data
	4.8.2	Read Reactive Import Profile Data
	4.8.3	Read Export Profile Data
	4.10	Read Network Data
	4.17	Retrieve Daily Consumption Log
Read Registers	4.1.1	Read Instantaneous Import Registers
	4.1.2	Read Instantaneous Import Time Of Use (TOU) Matrices
	4.1.3	Read Instantaneous Import TOU With Blocks Matrices
	4.2	Read Instantaneous Export Registers
	4.12.1	Read Maximum Demand Import Registers
	4.12.2	Read Maximum Demand Export Registers
	4.15	Read Load Limit Data
	4.16	Read Active Power Import
Scheduling	5.1	Create Schedule
	5.2	Read Schedule
	5.3	Delete Schedule
Read Device Information	6.2.2	Read Device Configuration (Randomisation)
	6.2.4	Read Device Configuration (Identity Exc MPxN)
	6.2.7	Read Device Configuration (MPxN)
	6.13	Read Event Or Security Log

Business processes and related SRVs to be reported on		
Business Process	Service Reference Variant	Description
	7.4	Read Supply Status
	8.2	Read Inventory
	11.2	Read Firmware Version
Maximum Demand	6.18.1	Set Maximum Demand Configurable Time Period
	6.18.2	Reset Maximum Demand Registers
Auxiliary Load	7.7	Read Auxiliary Load Switch Data
	7.14	Read Auxiliary Controller Configuration Data
	7.15	Read Auxiliary Controller Operational Data
Other SRVs	4.4.2	Retrieve Change Of Mode / Tariff Triggered Billing Data Log
	6.27	Update Device Configuration (RMS Voltage Counter Reset)
	8.4	Update Inventory
	12.1	Request WAN Matrix
	12.2	Device Pre-notification

Alert reporting

The DCC will provide reporting against all Alerts (defined in Annex D) for each User, which will include:

- a daily average view of success/failure and delivery times for the sending of Alerts for the report recipient against the same metrics at an industry level;
- a monthly summary of success/failure for the sending of Alerts against the industry average; and
- a data file identifying all data fields (defined in Annex D) against each Alert type.

In addition, Electricity Distributors will also receive:

- a breakdown of Alerts N13 'Failure to receive Response from Device' and N55 'SMETS1 Service Provider (S1SP) Service Request Validation Failure' split by Meter Type, Model, and firmware version;
- a report identifying volumes of N42 'Security Credentials Updated on the Device' Alerts received within the service level agreement of seven days following an N16 'Device Identity Confirmation' Alert, split by Energy Supplier; and
- reporting identifying Power Outage Alerts with no subsequent Power Restoration Alert.

Customer Analytics Reporting guidance document

The guidance document consists of the below sections:

- Background & Scope;
- Overview of Reporting;
- Change Process (which outlines how changes to existing reporting and requests for additional reporting will be managed); and
- Reporting Contents.

SECAS and the DCC will consult Parties and relevant Sub-Committees on the contents of the guidance document as the modification progresses and update accordingly. The final document will be owned by the DCC, hosted on the DCC Website and accessible to all DCC Users. The DCC will consult with the affected Parties on any changes to the reporting suite (and subsequently to this document) that are identified after this modification has been implemented.

Full details can be found in Annex D 'DCC Customer Analytics Reporting guidance document'.

Alternative Solution

The Alternative Solution would still deliver the reporting described in the Proposed Solution, and would be subject to the same guidance and change process. It would also deliver an online customer portal service for the aggregated performance and reporting data, which will contain interactive versions of the PDF documents for customers to interact with and download from.

Full details can be found in Annex E 'DCC Preliminary Impact Assessment for the Alternative Solution'.

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

DCC Impact

The DCC will require increased resource to support and deliver the enhanced reporting suite. The full impacts on the DCC can be found in the DCC Preliminary Assessment response in Annex C.

Impact on Supplier Parties

There will be no direct impact on Supplier Parties from this modification, however they will receive a more detailed level of reporting from the DCC and may wish to amend their internal processes accordingly.

Impact on Electricity Network Operators

There will be no direct impact on Electricity Network Operators from this modification, however they will receive a more detailed level of reporting from the DCC and may wish to amend their internal processes accordingly.

DCC System

There is not expected to be any impact on DCC Systems as a result of implementing this modification.

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 B.

Devices

This modification will have no impact on Devices.

Consumers

This modification is expected to have a positive impact on Consumers. It will allow SEC Parties to better identify shortcomings in performance and address the root causes, reducing the time taken to resolve issues and improving customer experience.

Other industry Codes

This modification is expected to have no impact on other industry Codes.

Greenhouse gas emissions

This modification is expected to have no impact on greenhouse gas emissions.

5. Costs

DCC costs

Proposed Solution

The estimated DCC cost to implement the Proposed Solution for this modification is £139,320. This cost covers design, development, and testing within a selected DCC Data Science & Analytics (DS&A) environment.

Breakdown of DCC implementation costs – Proposed Solution	
Activity	Cost
Design, Test & Implement	£72,000
Application Support ¹	£67,320

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

Alternative Solution

The estimated DCC cost to implement the Alternative Solution for this modification is £190,000. This cost covers design, development, and testing within a selected DCC Data Science & Analytics (DS&A) environment.

More information can be found in the DCC Preliminary Impact Assessment for the Alternative Solution in Annex E.

SECAS costs

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

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

SEC Party costs

There are not expected to be any costs to SEC Parties to implement this modification.

¹ The quoted Application Support costs are for one year only. After that time, the costs will be considered as part of Business as Usual, and will be covered by annual DS&A costs.

6. Implementation approach

Recommended implementation approach

SECAS is recommending an implementation date of:

- **29 June 2023** (June 2023 SEC Release) if a decision to approve is received on or before 29 December 2022; or
- **2 November 2023** (November 2023 SEC Release) if a decision to approve is received after 29 December 2022 but on or before 2 May 2023.

This implementation approach is based on the DCC's assessment of a six month delivery time from approval to implementation. This is a targeted approach and may be subject to change depending on the DCC's full Impact Assessment of the Alternative Solution.

7. Assessment of the proposal

Observations on the issue

Views of the Change Sub-Committee

During its initial assessment, the Change Sub-Committee (CSC) agreed that further development was required to understand whether a SEC modification was the correct route to progress this change. The Proposer clarified that this was the option preferred by all DCC Users surveyed, their view being that if this reporting were to be provided as an elective service the uptake would be lowest among the poorest performers, negatively impacting all Parties. Following this clarification, the CSC agreed that this modification was ready to progress to the Refinement Process.

Views of the Working Group

A Working Group member noted that there may be data privacy implications when reporting Device Alerts if they are not specific to the User receiving the report.

The Working Group also noted that Distribution Network Operators (DNOs) already receive reporting which shows Power Outage Alerts (POAs) with no subsequent Power Restoration Alerts. It was agreed that the DCC would provide an explanation of exactly what the Customer Analytics Reporting suite adds in this area that is not covered by existing reporting, so that Parties can assess if this should be included in the modification's requirements. These details can be found in Annex D 'Customer Analytics Reporting guidance document'.

The Working Group agreed that the Customer Analytics Reporting guidance document referenced in the legal text should be provided during the Refinement Process to allow Parties to consult on its contents and implementation. Further details can be found in the 'Solution development' section below.

Solution development

Following implementation of MP122A, the DCC held workshops with DCC Users to understand if the PMR, while suitable for reporting on the overall health of the smart metering network, meets the reporting needs of individual Parties. These workshops returned the feedback that while the PMR provides an industry-wide view of performance, there is no way for the DCC or any individual SEC Party to view Party-specific performance within each metric.

The Proposer seeks to provide a standardised set of benchmarked reporting to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to enable them to diagnose reasons for poor performance so that they can take steps to address it. The DCC's workshops with DCC Users (including Import Suppliers, Export Suppliers, Gas Suppliers and Electricity Distributors) and via the DCC's Quarterly Finance Forum provided a unanimous view that this should be implemented into the SEC as it would mandate receipt of this information by all Parties and therefore offer equal benefit to them.

The DCC extended the scope of the reporting to a Device and Party level. Following further workshops and consultations with its Users on what reporting metrics would be most beneficial, the DCC proposed three categories to be included in the Customer Analytics Reporting suite: inventory reporting; business process reporting; and Alert reporting. The Working Group highlighted that any solution must include the scope to add or amend metrics to the reporting suite in future if necessary, and how these changes will be costed. The reporting change process can be found in Annex D 'Customer Analytics Reporting guidance document'.

Following workshops and consultations with Users, the DCC Technical Operations Centre (TOC) proposed three categories to be included in the Customer Analytics Reporting suite:

- inventory;
- business process; and
- Alert reporting.

The solution must include the scope to add or amend metrics to the reporting suite in future, and how such changes will be costed. Full details can be found in Annex D 'DCC Customer Analytics Reporting guidance document'.

During the DCC's Preliminary Assessment, it was determined that the requirements of the modification could be met in full using existing data available in the TOC. The reporting is to be delivered in Comma-Separated Values (CSV) file and Portable Document Format (PDF) file formats.

As part of its Preliminary Assessment response, the DCC proposed the provision of a secure self-service portal for its Users to obtain a 'dynamic' view of the reporting. The Working Group discussed the addition of this solution option as a 'Part B' to this modification but agreed that this was not suitable as the development of tools for customer access should be assessed within the context of the wider DCC service and there would be no cost benefit to tying this in with the implementation of the reporting suite.

The Proposer subsequently suggested that the reporting could be delivered via a customer web portal, in addition to the static reporting, as an Alternative Solution. The DCC completed a Preliminary Assessment for the Alternative Solution, which can be found in Annex E. SECAS presented this Preliminary Assessment to the Working Group alongside the full Impact Assessment for the Proposed Solution. The Working Group agreed that the Alternative Solution was preferable and that a full Impact Assessment for this option should be requested.

A respondent to the Refinement Consultation noted that there could be synergies between the solutions for MP176 and [MP096 'DNO Power Outage Alerts'](#), and recommended that any enhancements to the Alert reporting within MP176 are reflective of the changes agreed in MP096. This was seconded by another Refinement Consultation response, which highlighted a concern that implementation of MP176 may lead to a duplication of efforts in DCC reporting. SECAS will request that the DCC investigates any synergies as part of its full Impact Assessment and liaise with the DCC to ensure Parties are not receiving duplicated reporting.

8. Case for change

Business Case

Implementing this modification will provide DCC Users with insights into a variety of business processes, highlighting where focus for improvement is required. By delivering a baselined report which shows the same level of data to each Party within the same User Role, there is no competitive advantage conferred to one Party over another. Instead, Parties will be able to develop their internal processes in addition to improving processes which involve interacting with other Parties, leading to a shared benefit across the industry.

The combined improvements in performance, data quality and data visibility will have a positive impact on the experience of Consumers. Empowering DCC Users to identify issue root causes will lead to fewer faults, fewer site visits and ultimately a lower cost to service.

It is difficult to quantify the positive impact of implementation, as this will depend on DCC Users taking the subsequent actions to capitalise on the reporting enhancements this modification will deliver. However, as the purpose of this modification is to provide a baseline which can then be built on, benefits to industry costs and reputation could continue to be seen well into the future.

Views against the General SEC Objectives

Proposer's views

The Proposer's view is that implementing this modification will better facilitate SEC Objective (a)² by allowing Parties to identify potential shortcomings in their key business processes and implementing the necessary fixes.

Industry views

All respondents to the Refinement Consultation agreed that this modification will better facilitate SEC Objective (a) by driving performance enhancements leading to an improved Smart service.

² Facilitate the efficient provision, installation, and operation, as well as interoperability, of Smart Metering Systems at Energy Consumers' premises within Great Britain.

Views against the consumer areas

Improved safety and reliability

This modification will result in a greater level of reporting to Supplier Parties, allowing them to identify and resolve potential faults.

Lower bills than would otherwise be the case

This modification will result in a greater level of reporting to Supplier Parties, allowing them to streamline their processes and potentially pass savings onto customers.

Reduced environmental damage

This modification will have a neutral effect on this area.

Improved quality of service

This modification will result in a greater level of reporting to Supplier Parties, allowing them to identify the root causes of performance issues more quickly and improve customer experience.

Benefits for society as a whole

This modification will have a neutral effect on this area.

Appendix 1: Progression timetable

SECAS received the DCC Impact Assessment response for the Proposed Solution on 1 June 2022. The DCC has also concluded its Preliminary Assessment on an Alternative Solution. Both solutions were discussed at the Working Group on 3 August 2022, where the Working Group agreed an Impact Assessment for the Alternative Solution should be sought. This request will be presented to the Change Board for approval on 24 August 2022.

Timetable	
Event/Action	Date
Draft Proposal raised	8 Jul 2021
Presented to CSC for initial comment	27 Jul 2021
CSC converts Draft Proposal to Modification Proposal	31 Aug 2021
Solution developed with Proposer	Sep-Oct 2021
Modification discussed with Working Group	3 Nov 2021
Preliminary Assessment requested	17 Nov 2021
Preliminary Assessment returned	14 Dec 2021
Modification discussed with Working Group	5 Jan 2022
Modification discussed with Working Group	2 Feb 2022

Managed by

Timetable	
Event/Action	Date
Refinement Consultation	7 – 25 Mar 2022
Impact Assessment costs approved by Change Board	20 Apr 2022
Impact Assessment requested	21 Apr 2022
Impact Assessment returned	10 Jun 2022
Preliminary Assessment (Alternative Solution) requested	15 Jul 22
Preliminary Assessment (Alternative Solution) returned	21 Jul 2022
Modification discussed with Working Group	3 Aug 2022
<i>Impact Assessment (Alternative Solution) costs approved by Change Board</i>	24 Aug 2022
<i>Impact Assessment (Alternative Solution) requested</i>	25 Aug 2022
<i>Impact Assessment (Alternative Solution) returned</i>	19 Oct 2022
<i>Modification discussed with Working Group</i>	2 Nov 2022
<i>Modification Report approved by CSC</i>	15 Nov 2022
<i>Modification Report Consultation</i>	16 Nov – 7 Dec 2022
<i>Change Board Vote</i>	21 Dec 2022

Italics denote planned events that could be subject to change

Appendix 2: Glossary

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

Glossary	
Acronym	Full term
CoS	Change of Supply
CSC	Change Sub-Committee
CSV	Comma-Separated Values
DCC	Data Communications Company
DNO	Distribution Network Operator
ENO	Electricity Network Operator
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
GUID	Globally Unique Identifier
HAN	Home Area Network
I&C	Install & Commissioning
MPxN	Meter Point Administration/Reference Number
PDF	Portable Document Format
PMR	Performance Measurement Report
POA	Power Outage Alert

Glossary	
Acronym	Full term
S1SP	SMETS1 Service Provider
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SMETS	Smart Metering Equipment Technical Specifications
SR	Service Request
SRV	Service Reference Variant
RMS	Root Mean Squared
TOC	Technical Operations Centre
TOU	Time Of Use
WAN	Wide Area Network

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MP176 ‘Customer Analytics Reporting’

Annex A

Business requirements – version 0.5

About this document

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

1. Business requirements

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

Business Requirements	
Ref.	Requirement
1	For the User Roles: Import Supplier, Export Supplier, Gas Supplier, and Electricity Distributor, the DCC will provide inventory reporting identifying the User's Metering Estate.
2	The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.
3	The DCC shall provide reporting on DCC and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.
4	The DCC shall make all the data captured under Requirements 1, 2 and 3 available to the relevant DCC User via an online interactive portal, allowing the User analytic capability through configurable data views.

This document contains requirements for multiple solution options, and an assessment for each option is to be provided. The table below summarises the requirements that make up each solution option:

Solution Options				
Option	Req. 1	Req. 2	Req. 3	Req. 4
Option 1	✓	✓	✓	
Option 2	✓	✓	✓	✓

2. Considerations and assumptions

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

2.1 General

This solution will be applied to Smart Metering Equipment Technical Specifications (SMETS) 1 and SMETS2+ Devices.

The DCC will provide anonymised league tables for key business processes, identifying average performance per Smart Energy Code (SEC) Party for that Business Process and identifying the positioning on those league tables of only the SEC Party to whom that report is directed. DCC Customer Analytics Reporting will not share any Device Level data with any party other than the target SEC Party.

Any SEC Party which is active in DCC Systems can request a new report to be added to the Customer Analytics Reporting suite, or request a change to an existing report, by making a request to a DCC group mailbox.

As part of its Impact Assessment, the DCC is requested to consider how the delivery of the Customer Analytics Reporting suite will avoid duplication of other reports to its customers, and whether there are any synergies with the implementation of [MP096 'DNO Power Outage Alerts'](#) which could reduce overall costs.

2.2 Requirement 1: For the User Roles: Import Supplier, Export Supplier, Gas Supplier, and Electricity Distributor, the DCC will provide inventory reporting identifying the User's Metering Estate.

- 1) A single bar graph for each Device Type (Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), In Home Display (IHD), Pre-Payment Meter Interface Device (PPMID), Other) identifying each Device Model (along the x-axis) and the volume of meters and of each firmware model (on the y-axis).
- 2) A single Device Model bar graph giving a breakdown of each SEC Party's estate firmware version, highlighting the report recipient and the industry average
- 3) The DCC will provide for each customer a CSV data file identifying all Devices on their estate with the following data fields:
 - Device Identifier;
 - Smart Metering System (SMS) Identifier;
 - Device Type;
 - Device Model;
 - Firmware version;
 - Communication Service Provider (CSP) Id;
 - Energy Supplier Id;
 - Distribution Network Operator (DNO) Id;
 - MPxN;
 - Postcode;
 - Last Meter Read time/date;
 - Last Alert time/date;
 - Last Alert Code (only if sent to report recipient);
 - Commissioned Status;
 - Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts);
 - Prepayment flag;
 - SMETS version;
 - whether the Device expires on the Central Products List (CPL) within 30 days;

- Devices whose Security Certificates are due to expire; and
- Change of Supplier Start and End dates.

Note: The above request was captured at a DCC Workshop. The DCC believe that this data could run to many million rows and therefore suggest some form of exception reporting. The format of this report is therefore to be discussed with customers in the Working Group. As part of the DCC's Preliminary Impact Assessment, the Smart Energy Code Administrator and Secretariat (SECAS) is requesting the DCC provide costing for the full reporting.

A Working Group member noted that there may be data privacy implications when reporting Device Alerts if they are not specific to the User receiving the report. It has been added to the requirements that Alerts reporting should only be provided to the User who receives those Alerts.

All inventory reporting will provide a snapshot view at the end of the calendar month.

2.3 Requirement 2: The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.

- 1) The DCC will report for each of the requirements noted in this section, identifying in separate graphs:
 - a) A monthly average benchmark of success or failure against other Users operating in the same User Role;
 - b) A monthly view of Round Trip Time or Alert delivery time, identifying User best, worst, mean and median against those same metrics at an industry level for other Users operating in the same User Role;
 - c) A daily average view of success/failure and average Round Trip Time for that User compared to industry average. Where relevant, performance will be broken down by meter type, Region and SMETS1/SMETS2, and 'Category 1 & 2' Incidents will be highlighted. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.

'Success' will be determined by the receipt of a 'Successful' Response code that has not timed out. 'Failure' will be determined by the receipt of an 'Exception' or 'Timeout' Response code.

- 2) The DCC will provide a monthly CSV data file for each Service Reference Variant (SRV), identifying at an aggregated level the following criteria:
 - Response code;
 - Communications Hub Manufacturer;
 - Communications Hub Model;
 - Communications Hub Function;
 - Communications Hub Firmware;

- Device Type;
- Device Manufacturer;
- Device Model;
- Device Firmware Version;
- Region; and
- Round Trip Time.

2.4 Requirement 3: The DCC shall provide reporting on DCC and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Electricity Distributors will receive reporting on the following subset of Alerts:

- AD1 – Power Outage Alert;
- 8F35 – Supply Outage Restored;
- 8F36 – Supply Outage Restored - Outage $\geq$ 3 minutes;
- 8F58 – Supply interrupted on Phase 1;
- 8F59 – Supply interrupted on Phase 2;
- 8F5A – Supply interrupted on Phase 3;
- 8F37 – Supply Outage Restored on Phase 1;
- 8F38 – Supply Outage Restored on Phase 1 Restored - Outage $\geq$ 3 minutes;
- 8F39 – Supply Outage Restored on Phase 2 Restored;
- 8F3A – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F3B – Supply Outage Restored on Phase 3 Restored;
- 8F3C – Supply Outage Restored on Phase 3 Restored - Outage $\geq$ 3 minutes;
- 8F0C – Clock not adjusted (adjustment greater than 10 seconds);
- 81C6 – Clock not adjusted (outside tolerance);
- N12 – Failure to deliver Command to Device;
- N13 – Failure to receive Response from Device;
- N53 – Command not delivered to ESME; and
- N55 – SMETS1 Service Provider (S1SP) Service Request Validation Failure

This reporting will provide the following views:

1. A daily average view of success/failure of Alert sending and average delivery time for that customer compared to industry average.
2. A monthly summary of success compared to industry average.

3. The DCC will provide a monthly CSV data file for each Alert type, identifying at an aggregated level all dimensions that SVP report on:

- Success/Failure;
- Communications Hub Manufacturer;
- Communications Hub Model;
- Communications Hub Function;
- Communications Hub Firmware;
- Device Type;
- Device Manufacturer;
- Device Model;
- Device Firmware Version;
- Region; and
- Round Trip Time.

'Success' will be determined by the receipt of a 'Successful' Response code that has not timed out. 'Failure' will be determined by the receipt of an 'Exception' or 'Timeout' Response code.

4. Reports for the Electricity Distribution role for the Alerts N13 'Failure to receive Response from Device' and N55 'S1SP Service Request Validation Failure' will receive an additional view identifying a breakdown of the Alerts split by Meter Make, Model, Firmware Version.
5. In addition, the following reports will be produced specifically for the Electricity Distribution role:
 - a) Report comparing the daily monitoring of N16 'Device Identity Confirmation' Alerts with N42 'Security Credentials Updated on the Device' Alerts identifying volumes which have met seven days service level agreement (SLA) for receipt of the N42 following N16 and those that have failed this metric, identifying the associated Responsible Supplier;
 - b) Standardised Reporting identifying Power Outage Alerts with no Power Restoration Alerts:
 - i) AD1 with no 8F35
 - ii) AD1 with no 8F36
 - iii) 8F35 with no AD1
 - iv) 8F36 with no AD1

2.5 Requirement 4: The DCC shall make all the data captured under Requirements 1, 2 and 3 available to the relevant DCC User via an online interactive portal, allowing the User analytic capability through bespoke data views.

The reporting scope and the change process will be unaffected, but in addition to delivering the reporting in a CSV/PDF format, DCC Users will be able to access the relevant performance metric data via the DCC web tool and tailor the data views to meet their own analytical needs.

Managed by

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
CPL	Central Products List
CSP	Communication Service Provider
DCC	Data Communications Company
DNO	Distribution Network Operator
ESME	Electricity Smart Metering Equipment
GSME	Gas Smart Metering Equipment
IHD	In Home Display
PPMID	Pre-Payment Meter Interface Device
RSVP	Rate, Speed, Volume, Payload
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
S1SP	SMETS1 Service Provider
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specifications
SMS	Smart Metering System
SRV	Service Reference Variant

This document is classified as **White** in accordance with the Panel Information Policy. Information can be shared with the public, and any members may publish the information, subject to copyright.

MP176 ‘Customer Analytics Reporting’

Annex B

Legal text – version 0.2

About this document

This document contains the redlined changes to the Smart Energy Code (SEC) that would be required to deliver this Modification Proposal.

Section A 'Definitions and Interpretation'

These definitions will be included in alphabetical order into the latest version of Section A at the time of implementation.

<u>Customer Analytics Reporting</u>	<u>means a reporting suite provided by the DCC to Users, as described in Section H13.6A (Customer Analytics Reporting).</u>
--	---

Section H 'DCC Services'

These changes have been redlined against Section H version 14.0.

Add Sections H13.6A & H13.6B as follows:

Customer Analytics Reporting

H13.6A The DCC shall establish and periodically review (including such reviews as the Panel may request), in consultation with the Panel and Users, a Customer Analytics Reporting methodology and guidance document. The Customer Analytics Reporting must set out performance metrics for some or all of the Services, and must provide each User with details of the performance achieved in respect of that User against those metrics, together with details of the performance achieved in respect of other Users in the same User Role on an anonymised, industry-wide basis.

H13.6B The DCC shall, within 10 Working Days following the end of each month, provide the Users with the Customer Analytics Reporting for that month.

SEC Modification Proposal, MP0176

Customer Analytics Reporting

Final Impact Assessment (FIA)

Version:	0.3
Date:	1st June, 2022
Author:	DCC
Classification:	DCC Public

Contents

1	Executive Summary	3
2	Document History	4
2.1	Revision History	4
2.2	Associated Documents	4
2.3	Document Information.....	4
3	Context and Requirements	5
3.1	Problem Statement	5
3.2	Business Context and Requirements.....	5
3.3	Business Requirements	5
4	Description of Technical Solution	10
4.1	DCC Data Science and Analytics.....	10
4.2	DS&A Solution Overview	11
4.2.1	Delivery Mechanism	12
4.3	Solution Constraints and Changes	12
4.4	Working Methodology	12
4.5	Data Delivery, Testing, and User Acceptance.....	12
5	Impact on Systems, Processes and People	14
5.1	Infrastructure Impact	14
5.2	Security Impact	14
5.3	Technical Specifications	14
5.4	Data Science & Analytics Team and wider DCC Operations	15
6	Implementation Timescales and Approach.....	16
6.1	Modification Development Timescales	16
6.2	Testing and Acceptance.....	16
7	Costs and Charges.....	17
7.1	Design, Build and Testing Cost Impact.....	17
7.2	Infrastructure and Software	17
7.3	Applications Support.....	17
7.4	Year 2022 Solution Delivery	17
	Appendix A: Glossary	18

1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to implement SECMP0176 which comprises:
 - £72,000 in Design, Build, Implementation and execution costs
 - £63,720 Application Support costs, chiefly infrastructure and software licensing. Note these will be absorbed by DCC after the 1st year.
- A timescale to complete the implementation of six (6) months

Problem Statement

As part of SECMP0122A the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success, or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting applies to all SEC Parties in an anonymised view.

Benefit Summary

This Modification will provide a standardised set of benchmarked individualised reports to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to allow them to diagnose reasons for poor performance so that they can take steps to address it. The Modification will provide both PDF files and "raw" CSV data relating to Service User performance over the last month.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
02/05/2022	0.1	DCC Internal Review
01/06/2022	0.3	Second DCC Internal Review

2.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP176 Modification Report	SECAS	17/11/2021
2	MP176 Business Requirement v0.2	SECAS	17/11/2021
3	MP176 Legal Text v0.1	SECAS	17/11/2021
4	MP176 Preliminary Assessment Request	SECAS	17/11/2021
5	SECMP0176 Customer Analytics Reporting Preliminary Impact Assessment (PIA)	DCC	10/12/2021

References are shown in this format, [1].

2.3 Document Information

The Proposer for this Modification is Easton Brown from the Data Communications Company (DCC).

The original Preliminary Impact Assessment was requested of DCC on 17th November 2021.

Note that the DCC Technical Operations Centre (TOC) previously identified as the DCC team providing the reporting has been renamed to the Data Science and Analytics (DS&A) team and is described in Section 4 as part of the Technical Solution.

3 Context and Requirements

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

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

3.1 Problem Statement

Following the implementation of SECMP0122A, the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success, or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting is an anonymised view of reporting which does not provide customers with a view of their own performance, how they compare with other SEC Parties, or the ability to simply diagnose factors (Devices, Firmware, Geographic Location, Orchestration) that could be affecting their performance against key business processes, which in turn reduces the ability of Users to drive improvement, and the ability of the DCC to assist them in doing so.

The Proposer seeks to provide a standardised set of benchmarked reporting to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to enable them to diagnose reasons for poor performance so that they can take steps to address it. The DCC's workshops with DCC Users (including Import Suppliers, Export Suppliers, Gas Suppliers and Electricity Distributors) and via DCC's Quarterly Finance Forum provided a unanimous view that this should be implemented via a SEC Modification as it would mandate receipt of this information by all Parties and therefore offer equal benefit to them.

3.2 Business Context and Requirements

During the initial development of SECMP0122, the reporting requirements were dimensioned by SRV and Region. To better understand the shortcomings in performance, the DCC extended the reporting model to Device and Party levels, which revealed a significant disparity in performance levels between DCC Users across several key business processes. As not all SEC Parties have the reporting capabilities to assess their own performance against these key metrics, they have a reduced ability to drive improvement within their own businesses and in their interactions with the DCC. The inability to identify areas of concern can lead to delays in industry processes and have financial and reputational costs across all Parties.

3.3 Business Requirements

This solution will be applied to Smart Metering Equipment Technical Specifications (SMETS) 1 and SMETS2+ Devices.

The DCC will provide anonymised league tables for key business processes, identifying average performance per Smart Energy Code (SEC) Party for that Business Process and identifying the positioning on those league tables of only the SEC Party to whom that report is directed. DCC Customer Analytics Reporting will not share any Device Level data with any party other than the target SEC Party. Any SEC Party which is active in DCC Systems can request a new report to be added to the Customer Analytics Reporting suite, or request a change to an existing report, by making a request to a DCC group mailbox, but additional design, build and test costs will be incurred.

Ref.	Requirement
1	For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate.
2	The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.
3	The DCC shall provide reporting on DCC, and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Requirement 1: For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate

1. A single bar graph for each Device Type (Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), In Home Display (IHD), Pre-Payment Meter Interface Device (PPMID), and Other identifying each Device Model (on the x-axis) and the volume of meters and of each firmware model (on the y-axis).
2. A single Device Model bar graph giving a breakdown of each SEC Party's estate firmware version, highlighting the report recipient and the industry average

The DCC will provide for each customer a CSV data file identifying all Devices on their estate with the following data fields:

- Device Identifier;
- Smart Metering System (SMS) Identifier;
- Device Type;
- Device Model;
- Firmware version;
- Communication Service Provider (CSP) Id;
- Energy Supplier Id;
- Distribution Network Operator (DNO) Id;
- MPxN;
- Postcode;
- Last Meter Read time/date;
- Last Alert time/date;
- Last Alert Code;
- Commissioned Status;
- Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts);
- Prepayment flag;
- SMETS version;
- whether the Device expires on the Central Products List (CPL) within 30 days;

- Devices whose Security Certificates are due to expire; and
- Change of Supplier Start and End dates.

Requirement 2: The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.

1. The DCC will report for each of the requirements noted in this section, identifying in separate graphs:
 - A monthly average benchmark of success or failure against other customers operating in the same User Role.
 - A monthly view of Round-Trip Time or Alert delivery time, identifying customer best, worst, mean and median against those same metrics at an industry level for other customers operating in the same User Role.
 - A daily average view of success/failure and average Round Trip Time for that customer compared to industry average. Where relevant, performance will be broken down by meter type, Region and SMETS1/SMETS2, and 'Category 1 & 2' Incidents will be highlighted. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.
2. The DCC will provide a monthly CSV data file for each Service Reference Variant (SRV), identifying at an aggregated level all dimensions that Speed, Volume, Payload (SVP) report on:
 - Success/Failure;
 - Failure reason code;
 - Communications Hub Manufacturer;
 - Communications Hub Model;
 - Communications Hub Function;
 - Communications Hub Firmware;
 - Device Type;
 - Device Manufacturer;
 - Device Model;
 - Device Firmware Version;
 - Region; and
 - Round Trip Time.

Requirement 3: The DCC shall provide reporting on DCC, and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Electricity Distributors will receive reporting on the following subset of Alerts:

- AD1 – Power Outage Alert;
- 8F35 – Supply Outage Restored;
- 8F36 – Supply Outage Restored - Outage $\geq$ 3 minutes;
- 8F58 – Supply interrupted on Phase 1;
- 8F59 – Supply interrupted on Phase 2;
- 8F5A – Supply interrupted on Phase 3;
- 8F37 – Supply Outage Restored on Phase 1;
- 8F38 – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F39 – Supply Outage Restored on Phase 2 Restored;
- 8F3A – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F3B – Supply Outage Restored on Phase 3 Restored;
- 8F3C – Supply Outage Restored on Phase 3 Restored - Outage $\geq$ 3 minutes;
- 8F0C – Clock not adjusted (adjustment greater than 10 seconds);
- 81C6 – Clock not adjusted (outside tolerance);
- N12 – Failure to deliver Command to Device;
- N13 – Failure to receive Response from Device;
- N53 – Command not delivered to ESME; and
- N55 – SMETS1 Service Provider (S1SP) Service Request Validation Failure

This reporting will provide the following views:

1. A daily average view of success/failure of Alert sending and average delivery time for that customer compared to industry average.
3. A monthly summary of success compared to industry average.
4. The DCC will provide a monthly CSV data file for each Alert type, identifying at an aggregated level all dimensions that SVP report on:
 - Success/Failure
 - Failure reason code
 - Comms Hub Manufacturer
 - Comms Hub Model
 - Comms Hub Function
 - Comms Hub Firmware
 - Device Type

- Device Manufacturer
- Device Model,
- Device Firmware Version,
- Region,
- Round Trip Time

Reports for the Electricity Distribution role for the Alerts N13 'Failure to receive Response from Device' and N55 'S1SP Service Request Validation Failure' will receive an additional view identifying a breakdown of the Alerts split by Meter Make, Model, Firmware Version.

In addition, the following reports will be produced specifically for the Electricity Distribution role:

- a) Report comparing the daily monitoring of N16 'Device Identity Confirmation' Alerts with N42 'Security Credentials Updated on the Device' Alerts identifying volumes which haven't a seven-day Service Level Agreement (SLA) for receipt of the N42 following N16 and those that have failed this metric, sorted by Energy Supplier.
- b) Standardised Reporting identifying Power Outage Alerts with no Power Restoration Alerts:
 - i) AD1 with no 8F35
 - ii) AD1 with no 8F36
 - iii) 8F35 with no AD1
 - iv) 8F36 with no AD1

4 Description of Technical Solution

Following workshops and consultations with Users, the DCC Data Science and Analytics (DS&A) team has proposed three application components to be included in the Customer Analytics Reporting suite in accordance with the requirements:

- Inventory data-marts
- Business Process Analytics
- Alert Reporting and Metrics

The solution does include technical flexibility to add or amend metrics to the reporting suite in future. Such changes would be requested by Service Users and paid for under a Change Request.

4.1 DCC Data Science and Analytics

DCC's Data Science and Analytics (DS&A) function was formed from a specific sub element of the Technical Operations Centre (TOC). It has particular focus on underpinning the existing TOC capability with dedicated emphasis on utilising the considerable data DCC generates and captures. This team is responsible for all aspects of the data across the Data Analytics lifecycle from initial structuring and organisation, ensuring its timeliness availability across TOC and wider DCC. Within DS&A however, further data-analytical processing techniques are employed in order to derive insights for industry. The DS&A function also has DCC responsibility for its regulatory reporting.

DS&A operate secure and scalable cloud computing with powerful analytic software to help identify and understand how the DCC service is used with objectives to evaluate application execution, message flow and orchestration performance, device, HAN configuration compliance and more. The team is staffed by dedicated DCC sourced system experts, experience data scientists supported by cloud technologists and database developers and administrators.

DS&A have developed much of the DCC operational capability incorporating Service Visualisation of Operational Management dashboards, proactive alerting of operational metrics and anomaly detection systems. It is, however, it's Operations Analytics tools that will be utilised to fulfil this modification. Operational Analytics allow highly accurate monitoring of key DCC KPI's across many aspects of the end-to-end service and is operatable at Device, Meter-point, or transactional request identity level for a forensic analysis of specific behaviour and troubleshooting. It is when such seemingly discreet data is connected and aggregated that allow the correlation of trend analysis and generation of meaningful insights such that will drive this Modification.

DCC DS&A will be responsible for the design, development, implementation and BAU maintenance of the solution for this Modification.

4.2 DS&A Solution Overview

Utilising the data extracts presented by the Enterprise System Interface (ESI) between DSP and DCC, the DS&A team oversee custom written, automated Extract, Transform and Load (ETL) processes to maintain both Inventory and Transactional databases which will underpin the data model as utilised within this Modification. Inventory information, typically device, meter-point level data is received incrementally every 4 hours, whereas transactional records as logged by Service Audit Trail (SAT), Power Outage & Restoration Timing Logs are received continuously as they are written by DSP. This data is duly written to the database and is fully queryable for use by DS&A analytic systems.

The transactional data records (solicited Service Requests issued by Service Users and unsolicited device and DCC System alerts) are written out to specifically structured data-tables where they combine with dynamically built inventory information to tag critical information about each distinct transaction as follows:

- Responsible Supplier (Energy Participant fulfilling which Energy Role) at time of transaction (Service Request or Alert)
- Originator of ServiceRequest or Destination of Alert
- Responsible Network Operator Participants
- Device Configuration i.e., Device Model, Manufacturer, and the Active Firmware at time of transaction (Service Request or Alert)

Key fields of Service Audit Trail and related Power Outage / Restoration timing logs to be utilised in this Modification are:

- Mode of Operation and Command variant utilised
- Device ID and related Meter-point numbers
- Current lifecycle status, i.e., completed, pending delivery
- Device Execution status, i.e., Success, Failure
- Time spend in Northbound direction flow
- Time Spent in Southbound direction flow
- Start time of transaction (incorporating Power Outage and Restoration timestamps where relevant)
- End/Latest time of transaction (incorporating latest Power Outage and Restoration delivery timestamps and ENO Acknowledgement timestamp)
- Communications Service Provider utilised
- Response Code
- SLA Target for the Transaction for both DSP and DCC end to end
- SLA Performance Pass / Fail

- SLA Exclusion Time

Calculated metrics for this Modification include:

- Round Trip Time (distinct per transaction)
- Mean Round Trip Time (aggregated)

When aggregated the following optional metrics can be calculated:

- Max, Min, Median, Sum of Round-Trip Time.

4.2.1 Delivery Mechanism

Across all three reporting requirements stated within this Modification, DCC will publish all relevant files at the stated frequency to each Service User's secure SharePoint repository. The files will be of type PDF with exception for the three stated *data files* which will be in CSV format. Where possible and upon request, other file formats may be accommodated where a Service User has a different and specific preference.

4.3 Solution Constraints and Changes

DS&A have reviewed the requirements and concluded they can be met in full and delivered using existing data available and subsequently working within the constraints of the current solution should involve no commercial change to the DCC Solution, although there will be a direct impact on support and maintenance. DS&A is unaware of any additional data requirements specified to support this Modification since the release of the PIA and will deliver in accordance with this FIA.

4.4 Working Methodology

During the requirement gathering and refinement, principally as part of the SECMP0122 process which has driven this Modification requirement, the DCC and SECAS hosted workshops with the Working Group. These workshops aimed to validate the proposals in the Operational Metrics Review (OMR) in terms of the viability of implementing the recommendations, to refine the requirements further, and to enable fast delivery of new requirements and improvements.

It is proposed that the reporting as specified within this Modification will be delivered by DS&A via an iterative delivery mechanism, whereby a Minimum Viable Product (MVP) will be available in a first prototype release in the Implementation phase and following consultation with the Working Group, further functionality can be delivered in a fast and frequent continuous delivery mechanism until the final product is complete, using the same methodology as SECMP0122. This is considered the fastest and most exact method in ensuring the requirements are fulfilled and described further in Section 6.

4.5 Data Delivery, Testing, and User Acceptance

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 CSPs.

For any subsequent changes to requirements, external data provided by the Service Providers will require a limited technical change to reflect the provision of the data to the DCC. There are also several separate Modification proposals that are *'in-flight'* that may add

additional use-cases into scope for this modification, e.g., Throughput of Alert and CSP metrics and if delivered would also fall into a similar limited technical change to incorporate.

In some cases, however, mostly relating to the SMETS1 Service Providers (S1SPs), there is no current data provision, so a data transfer mechanism will have to be developed and is seen as outside of the scope for this Modification FIA.

5 Impact on Systems, Processes and People

As defined the change included in this document is confined to data already within DCC and available to DS&A, with no expected changes impacting SMETS1 or SMETS2 Service Providers.

5.1 Infrastructure Impact

No impact to existing infrastructure, however, to meet the requirements within this modification, an additional cloud instance of DS&A statistical computing platform is needed for monthly processing and shall be recorded as a explicit line item cost.

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

5.2 Security Impact

The solution will be security assured during the implementation phase and will comply with standard DS&A reviews, however no impact from such assessments is anticipated.

5.3 Technical Specifications

No change to DUIS, GBCS, or any other Technical Specification.

5.4 Data Science & Analytics Team and wider DCC Operations

The full range of activities required to implement these requirements including design, development, testing, and implementation would be performed by DCC DS&A utilising in-house contractors and permanent staff. There will be a slight increase in the Full Time Equivalents (FTEs) required to do this and support, maintain, and deliver the reporting monthly. These activities are defined within the following table:

DCC Operations Area	Service provided for this Modification	Additional FTE
DS&A Data Science	• Development of new database tables and relevant stored procedures to fulfil them • Development of new reporting scripts for each reporting requirement • Building visualisations and report structures • Testing, documentation of above • Supporting all DCC Operational Areas with requirements below	0.6
DS&A Reporting	• Configuring the automated publishing delivery sources and destinations • Required to support and maintain the DS&A Reporting System Business as Usual, building DCC data throughout month and packaging report in 10-day production cycle • For Reports requirements: Support and query answering, plus maintenance and optimisation • Testing, documentation of all above	0.3
DS&A Data Solutions	• Incremental admin changes to database system backup, data-warehousing etc to accommodate all the above.	0.1
Service Management / Incident Management	• Incident handling such as: investigation will be required to identify whether the performance deterioration is as a result of issues with system, Comms Hubs, Meters, Orchestration, or areas entirely outside DCC visibility (actions taken by SEC Parties e.g., Staff being taken off work due to training, system issues with customers etc.)	N/A

6 Implementation Timescales and Approach

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. This work should be completed within six (6) months of approval.

As described in Section 4.4 and shown in Figure 1 an iterative approach will be utilised to deliver this Modification.

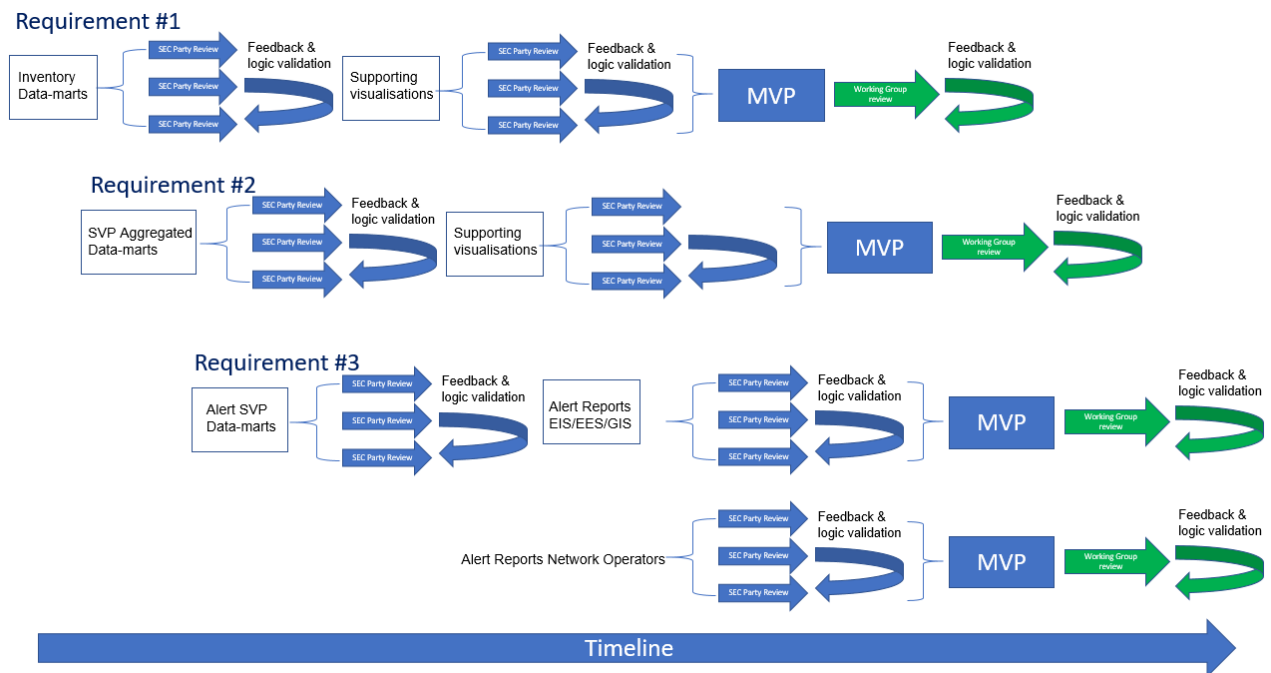


Figure 1 Implementation approach

6.1 Modification Development Timescales

Development schedule will broadly align to the MVP release dates on a per Requirement deliverable basis and will commence upon commercial acceptance.

The initial MVP for Requirement 1 will be available for Working Group review within 3 months from commercial acceptance. As indicated in Figure 1 this will involve Service User participation within this period.

Delivery of the remaining Requirements MVPs will be available within the following 3 months from release of Requirement 1 MVP and subsequently overall solution acceptance, to be achieved within 6 months of overall commercial acceptance of this Modification.

These timescales assume no significant delays are encountered within Working Group review phases. In summary, DCC will deliver the full solution within 6 months from Commercial Acceptance with first initial release available at end of month three (3).

6.2 Testing and Acceptance

It is assumed that the change will be implemented and tested as a separate release and will include testing iteratively, sometimes with Users, during development. The development and testing will not require the specific testing services of any external parties and instead utilise a collaborative approach with Service Users as is indicated in Figure 1.

7 Costs and Charges

This section indicates the total quote for the application development stage for this modification. Note these costs assume a standalone release of just this SEC Modification without any other Modifications or Change Requests.

7.1 Design, Build and Testing Cost Impact

Design, build, testing and implementation will attract one off cost as identified and will not follow the PIT, SIT, and UIT pattern associated with a "conventional" SEC Release.

Service Users would be engaged in the test phases for this Modification for each relevant MVP, although there would be no impacts on their systems.

7.2 Infrastructure and Software

An additional cloud instance of the DS&A statistical computing platform is required and will conform to an Amazon Web Services (AWS) z1d.6xlarge Instance server specification at 25% utilisation / month. This will equate to £7320 per year.

A single additional Management Information system license at £30,000 per year.

DCC DS&A will absorb these annual infrastructure and software license costs after the first year.

7.3 Applications Support

This refers to keep the application maintained and running. It is quoted as an annual cost and incorporates FTE effort, infrastructure and software licensing costs.

7.4 Year 2022 Solution Delivery Desi

£	Design, Test and Implement	Application Support (One Year)
FTE costs as identified in Section 5	72,000	
FTE Reporting		30,000
Infrastructure and Software costs		37,320
Total	72,000	67,320

The quoted Application Support costs are for one year only. After that time, the costs will be considered as part of Business as Usual, and will be covered by annual DS&A costs.

Appendix A: Glossary

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

Acronym	Definition
BAU, BaU	Business As Usual
CPL	Central Products List
CSP	Communication Service Provider
CSV	Comma Separated Variable
DCC	Data Communications Company
DNO	Distribution Network Operator
DS&A	Data Science and Analytics
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
FTE	Full Time Employees
GBCS	Great Britain Companion Specification
GSME	Gas Smart Metering Equipment
IHD	In Home Display
KPI	Key Performance Indicators
MVP	Minimum Viable Product
OMR	Operational Metrics Review
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
PPMID	Payment Meter Interface Device
ROM	Rough Order of Magnitude (cost)
SMS	Smart Metering System
SVP	Speed, Volume, Payload, a measure of performance of SRVs
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specification
SMS	Smart Metering System
SRV	Service Request Variant
SVP	Speed, Volume, Payload
S1SP	SMETS1 Service Provider
TOC	Technical Operations Centre
UIT	User Integration Testing

User Guidance Note

Customer Analytics Reporting



Version:

V0.2

Date issued:

25th February 2022

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DCC Public

Table of Contents

- 1 Background and Scope3**
- 2 Document Control4**
 - 2.1 Revision History4
 - 2.2 Related Documents4
- 3 Overview of Reporting5**
- 4 Change Process6**
- 5 Reporting Contents7**
 - 5.1 Inventory Reporting7
 - 5.2 Business Process Reporting8
 - 5.3 CSV Analytical reporting12
 - 5.4 Alert Reporting.....12

1 Background and Scope

SEC Mod 122A introduced performance monitoring against key DCC Customer Business Processes at a global level. Discussion with SEC Parties through the development of this Modification identified the following business requirements:

- Reporting at SEC Party level of their performance against key business processes;
- Benchmarking of this performance against other (anonymised) SEC Parties in the same User Role;
- Improved ability to diagnose the cause for lower performance where it occurs.

To that end, DCC and SECAS have worked closely with customers to identify their business requirements and to develop a framework for Customer Analytics Reporting that meets customer requirements.

This document will cover guidance for SEC Parties regarding the use, frequency and change process for Customer Analytics Reporting.

2 Document Control

2.1 Revision History

Revision Number	Revision Date	Summary of Changes	Name
0.1	25/01/22	Initial Draft	Mike Fenn and Easton Brown
0.2	25/02/22	Working Group review	Mike Fenn and Easton Brown

2.2 Related Documents

Document	Version	Author	Date
Smart Energy Code (SEC)	55.0	SECAS	08/11/2018

3 Overview of Reporting

- For each relevant User Role (as described in section 5), Users active in DCC systems will receive the following on a monthly basis:
 - Inventory Reporting (as described in section 5.1 of this document)
 - Monthly snapshot reporting packs which identify performance against key business processes and provides various benchmarks against other anonymised industry participants in the same User Role (as described in section 5.2 of this document);
 - Monthly CSV files for each business process, identifying successes and failures and additional information on the transactions to allow improved diagnosis of issues affecting performance (as described in section 5.3 of this document).
 - Reporting on alerts (as described in section 5.4 of this document).
- Change Processes for Customer Analytics Reporting are also contained within this document and governed by this document.

4 Change Process

4.1 Requesting New Reporting

Any SEC Party which is active in DCC Systems can request a new report to be added to the Customer Analytics Reporting suite by making a request to Datascience&Analytics@smartdcc.co.uk. The DCC will review requests as they are received and consult its customers on the necessary changes and associated costs before taking one of the following actions:

- i. if the majority of consultation respondents agree that the new reporting is required, the DCC will deliver the reporting, update reporting guides and advise all affected customers via a communication at the cost quoted in the consultation; or
- ii. if the majority of consultation respondents disagree that the new reporting is required, the originating SEC Party (or any other SEC Party) can request the new reporting from the DCC as an additional service.

In all instances the DCC will feedback to the originating Party identifying the resolution route, and if new reporting is to be created will communicate the details to all affected Parties.

4.2 Requesting Changes to Reporting Criteria

Any SEC Party which is active in DCC Systems can request a change to an existing report in the Customer Analytics Reporting suite by making a request to Datascience&Analytics@smartdcc.co.uk. The DCC will review requests as they are received and where the change is deemed necessary will deliver the amended reporting criteria at no additional cost.

If the change is deemed unnecessary then the originating SEC Party or any other SEC Party can request the revised reporting from the DCC as an additional service. The DCC will quote for the amended criteria.

4.3 Identifying Corrections to Existing Reporting

The DCC seeks to produce high quality reporting and to this end will seek to validate Customer Analytics Reporting with all recipients. It is obviously possible however that Service Users may at any point identify that the logic used for a particular report has not included or excluded particular business exceptions.

Any SEC Party which receives Customer Analytics Reporting may report any queries about the validity of the reporting and data to the DCC by making a request to Datascience&Analytics@smartdcc.co.uk. The DCC will review these requests as they are received and consult its customers on the necessary changes before taking one of the following actions:

- i. if the majority of consultation respondents agree that the existing reporting logic is incorrect, the DCC will correct the business logic, update reporting guides and advise all affected customers via a communication at no additional cost; or
- ii. if the majority of consultation respondents disagree with changing the existing reporting logic, the originating SEC Party (or any other SEC Party) can request the revised reporting from the DCC as an additional service. The DCC will quote for the amended reporting logic.

In all instances the DCC will feedback to the originating Party identifying the resolution route.

5 Reporting Contents

Reporting will be output on a monthly basis for the following categories; reporting may be developed for additional User Roles, or new User Roles may be added as recipients for existing reporting, subject to a successful change request:

5.1 Inventory Reporting

For the User Roles: Import Supplier, Export Supplier, Gas Supplier and Electricity Distributor, the DCC will provide monthly inventory reporting identifying the User's Metering Estate. This reporting will be provided in each of the following formats.

1. A single bar graph for each Device Type (Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), In Home Display (IHD), Pre-Payment Meter Interface Device (PPMID), Other) identifying each Device Model (along the x-axis) and the volume of meters and of each firmware model (on the y-axis).
2. A single Device Model bar graph, giving an anonymised breakdown of each SEC Party's estate firmware version, highlighting the report recipient and the industry average.
3. The DCC will for provide for each customer a CSV data file identifying all Devices on their estate with the following data fields:
 - Device Identifier;
 - Smart Metering System (SMS) Identifier;
 - Device Type;
 - Device Model;
 - Firmware version;
 - Communication Service Provider (CSP) Id;
 - Energy Supplier Id;
 - Distribution Network Operator (DNO) Id;
 - MPxN;
 - Postcode;
 - Last Meter Read time/date;
 - Last Alert time/date;
 - Last Alert Code (only if sent to report recipient);

- Commissioned Status;
- Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts);
- Prepayment flag;
- SMETS version;
- whether the Device expires on the Central Products List (CPL) within 30 days;
- Devices whose Security Certificates are due to expire; and
- Change of Supplier Start and End dates.

5.2 Business Process Reporting

The DCC shall provide reporting to its Users on the business processes defined in the table below, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.

Business Process	SRV	Description	Roles
Install and Commission	8.11	Update HAN Device Log	IS, GS
	6.21	Request Handover of DCC Controlled Device (Update Supplier Certificates)	IS, GS
	8.1.1	Commission Device	IS, GS
	8.7.2	Join Service (Join GPF with GSME)	GS
	6.20.1	Set Device Configuration (Import MPxN)	IS, GS
	1.1.1	Update Import Tariff (Primary Element)	IS, GS
	6.8	Update Device Configuration (Billing Calendar)	IS, GS
	8.14.1	Communications Hub Status Update Install Success	IS, GS
	8.7.1	Join Service (Critical)	IS, GS
	No Meter Read received within 30 days of 8.14.1		IS, GS
	Measure daily total volume of installs for the period against the predicted number of installs based upon historic install volumes		IS, GS
	Measure daily total volume of Install and Commission (SRV 8.14.1) versus Install and Leave (SRV 8.14.2).		IS, GS
Change of Supplier (Gain)	6.23	Update Security Credentials (CoS)	IS, GS
	1.1.1	Update Import Tariff (Primary Element)	IS, GS
	6.8	Update Device Configuration (Billing Calendar)	IS, GS
	Identification of whether there was a successful read within 30 days prior to CoS Gain		IS, GS
	Identification of whether 8.14.1 or 8.14.2 was sent by old supplier prior to CoS Gain		IS, GS

Business Process	SRV	Description	Roles
Change of Tenancy	3.2	Restrict Access for Change of Tenancy	IS, GS
Tariff Updates	1.1.1	Update Import Tariff (Primary Element)	IS, GS
	1.2.1	Update Price (Primary Element)	IS, GS
Pre-Payment	1.6	Update Payment Mode (Payment Mode = Prepayment)	IS, GS
	2.1	Update Prepay Configuration	IS, GS
	2.2	Top Up Device (Update Balance with positive value)	IS, GS
	2.3	Update Debt	IS, GS
Security and Key Management	6.15.2	Update Security Credential (Device)	IS, GS
	6.17	Issue Security Credentials	IS, GS
	6.21	Request Handover of DCC Controlled Device (Update Supplier Certificates) – other than use in Install and Commission process.	IS, GS
Update Device Firmware	11.1	Update Firmware	IS, GS
	11.3	Activate Firmware (Individual SR for each GUID for firmware activation)	IS, GS
Logistics CH Ordering and Returns	8.14.3	Communications Hub Status Update – Fault Return	IS, GS
	8.14.4	Communications Hub Status Update – No Fault Return	IS, GS
Distribution Networks Post I&C Activity	6.15.1	Update Security Credentials (Update Network Operator Certificates)	IS, GS, ED
	6.5	Update Device Configuration (Voltage)	ED
	6.22	Configure Alert Behaviour (Update ENO Alter Configuration)	IS, GS, ED
Meter Reads	4.6.1	Retrieve Import Daily Read Log	IS, GS
	4.6.2	Retrieve Export Daily Read Log	ES
	4.8.1	Read Active Import Profile Data	IS, GS, ED, OU
	4.8.2	Read Reactive Import Profile Data	IS, ED, OU
	4.8.3	Read Export Profile Data	ES, ED, OU
	4.10	Read Network Data	IS, GS, ED
	4.17	Retrieve Daily Consumption Log	IS, GS, ED, OU
Read Registers	4.1.1	Read Instantaneous Import Registers	IS, GS, ED

Business Process	SRV	Description	Roles
	4.1.2	Read Instantaneous Import TOU Matrices	IS, GS, ED
	4.1.3	Read Instantaneous Import TOU With Blocks Matrices	IS, ED
	4.2	Read Instantaneous Export Registers	ES, ED
	4.12.1	Read Maximum Demand Import Registers	IS, ED
	4.12.2	Read Maximum Demand Export Registers	ES, ED
	4.15	Read Load Limit Data	IS, ED
	4.16	Read Active Power Import	IS, ED
Scheduling	5.1	Create Schedule	IS, ES, GS, ED, OU
	5.2	Read Schedule	IS, ES, GS, ED, OU
	5.3	Delete Schedule	IS, ES, GS, ED, OU
Read Device Information	6.2.2	Read Device Configuration (Randomisation)	IS, ED
	6.2.4	Read Device Configuration (Identity Exc MPxN)	IS, ES, GS, ED, OU
	6.2.7	Read Device Configuration (MPxN)	IS, ES, GS, ED, OU
	6.13	Read Event Or Security Log	IS, GS, ED, OU
	7.4	Read Supply Status	IS, ES, GS, ED, OU
	8.2	Read Inventory	IS, ES, GS, ED, OU
	11.2	Read Firmware Version	IS, ES, GS, ED, OU
Maximum Demand	6.18.1	Set Maximum Demand Configurable Time Period	ED
	6.18.2	Reset Maximum Demand Registers	ED
Auxiliary Load	7.7	Read Auxiliary Load Switch Data	IS, ED, OU
	7.14	Read Auxiliary Controller Configuration Data	IS, ED, OU
	7.15	Read Auxiliary Controller Operational Data	IS, ED, OU

Business Process	SRV	Description	Roles
Other SRVs	4.4.2	Retrieve Change Of Mode / Tariff Triggered Billing Data Log	IS, GS
	6.27	Update Device Configuration (RMS Voltage Counter Reset)	ED
	8.4	Update Inventory	IS, ES, GS, ED, OU
	12.1	Request WAN Matrix	IS, ES, GS, ED, OU
	12.2	Device Pre-notification	IS, ES, GS, ED, OU

Roles Key:

- **IS – Import Supplier**
- **ES – Export Supplier**
- **GS – Gas Supplier**
- **ED – Electricity Distributor**
- **OU – Other User**

The DCC will report for each of the requirements noted in this section, identifying in separate graphs:

1. A monthly average benchmark of success or failure against other Users operating in the same User Role.
2. A monthly view of Round Trip Time or Alert delivery time, identifying User best, worst, mean and median against those same metrics at an industry level for other Users operating in the same User Role.
3. A daily average view of success/failure and average Round Trip Time for that User compared to the industry average of Users acting in that role. Where appropriate, performance will be broken down by meter type, Region and SMETS1/SMETS2, and 'Category 1 & 2' Incidents will be highlighted. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.

'Success' will be determined by the receipt of a 'Successful' Response code that has not timed out. 'Failure' will be determined by the receipt of an 'Exception' or 'Timeout' Response code.

5.3 CSV Analytical reporting

The DCC will also provide a monthly CSV data file for each Service Reference Variant (SRV), identifying at an aggregated level the following criteria:

- Response code;
- Communications Hub Manufacturer;
- Communications Hub Model;
- Communications Hub Function;
- Communications Hub Firmware;
- Device Type;
- Device Manufacturer;
- Device Model;
- Device Firmware Version;
- Region; and
- Round Trip Time.

5.4 Alert Reporting

For the User Roles: Import Supplier, Export Supplier and Gas Supplier, the DCC shall provide reporting on DCC and Device Alerts received, consisting of a total of all Alerts and individual reporting for each Alert. This reporting will provide the following views:

1. A daily average view of success/failure of Alert sending and average delivery time for that customer compared to industry average.
2. A monthly summary of success compared to industry average.
3. A monthly CSV data file for each Alert type, identifying at an aggregated level the following criteria:
 - Success/Failure;
 - Communications Hub Manufacturer;
 - Communications Hub Model;
 - Communications Hub Function;

- Communications Hub Firmware;
- Device Type;
- Device Manufacturer;
- Device Model;
- Device Firmware Version;
- Region; and
- Round Trip Time.

'Success' will be determined by the receipt of a 'Successful' Response code that has not timed out. 'Failure' will be determined by the receipt of an 'Exception' or 'Timeout' Response code.

Electricity Distributors will receive reporting on the following subset of Alerts:

- AD1 – Power Outage Alert;
- 8F35 – Supply Outage Restored;
- 8F36 – Supply Outage Restored - Outage $\geq$ 3 minutes;
- 8F58 – Supply interrupted on Phase 1;
- 8F59 – Supply interrupted on Phase 2;
- 8F5A – Supply interrupted on Phase 3;
- 8F37 – Supply Outage Restored on Phase 1;
- 8F38 – Supply Outage Restored on Phase 1 Restored - Outage $\geq$ 3 minutes;
- 8F39 – Supply Outage Restored on Phase 2 Restored;
- 8F3A – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F3B – Supply Outage Restored on Phase 3 Restored;
- 8F3C – Supply Outage Restored on Phase 3 Restored - Outage $\geq$ 3 minutes;
- 8F0C – Clock not adjusted (adjustment greater than 10 seconds);
- 81C6 – Clock not adjusted (outside tolerance);
- N12 – Failure to deliver Command to Device;
- N13 – Failure to receive Response from Device;
- N53 – Command not delivered to ESME; and
- N55 – SMETS1 Service Provider (S1SP) Service Request Validation Failure

Reports for the Electricity Distribution role for the Alerts N13 'Failure to receive Response from Device' and N55 'S1SP Service Request Validation Failure' will receive an additional view identifying a breakdown of the Alerts split by Meter Make, Model, and Firmware Version.

In addition, the following reports will be produced specifically for the Electricity Distribution role:

- a) Report comparing the daily monitoring of N16 'Device Identity Confirmation' Alerts with N42 'Security Credentials Updated on the Device' Alerts identifying volumes which have met seven days service level agreement (SLA) for receipt of the N42 following N16 and those that have failed this metric, identifying the associated Responsible Supplier;
- b) Standardised Reporting identifying Power Outage Alerts with no Power Restoration Alerts:
 - i) AD1 with no 8F35
 - ii) AD1 with no 8F36
 - iii) 8F35 with no AD1
 - iv) 8F36 with no AD1

SEC Modification Proposal, SECMP0176

Portal Access to Customer Analytics Reporting

Second Preliminary Impact Assessment (PIA)

Version:	1.0
Date:	21st July, 2022
Author:	DCC
Classification:	DCC Public

Contents

1	Executive Summary	3
2	Document History	4
2.1	Revision History	4
2.2	Associated Documents	4
2.3	Document Information.....	4
3	Context and Requirements	5
3.1	Problem Statement	5
3.2	Business Context and Requirements.....	5
3.3	Business Requirements	5
4	Description of Solution	10
4.1	DCC Data Science and Analytics.....	10
4.2	DS&A Solution Overview	10
4.3	Solution Constraints and Changes	12
4.3.1	Delivery Mechanism.....	12
4.4	Working Methodology	13
4.5	Data Delivery, Testing, and User Acceptance.....	13
5	Impact on Systems, Processes and People	14
5.1	Infrastructure Impact.....	14
5.2	Security Impact.....	14
5.3	Data Science & Analytics Team and Wider DCC Operations.....	14
6	Implementation Timescales and Approach.....	14
6.1	Testing and Acceptance.....	14
7	Costs and Charges.....	15
7.1	Design, Build, and Testing Cost Impact.....	15
	Appendix A: Glossary	16

1 Executive Summary

The Change Board are asked to approve the following:

- Total cost to complete the Full Impact Assessment (FIA) of £15,000
- The timescales to complete the Full Impact Assessment of 30 days
- ROM costs for SECMP0176 delivery of the reporting and a portal of £190,000

The total ROM costs to deliver are £190,000, which includes Design, Build and PIT, with a tolerance of $\pm 25\%$.

Problem Statement

As part of SECMP0122A the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting applies to all SEC Parties in an anonymised view.

Benefit Summary

This Modification will provide a standardised set of benchmarked individualised reports to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to allow them to diagnose reasons for poor performance so that they can take steps to address it.

In addition this second PIA proposes the implementation of a front end or portal that permits secure online access to anonymised differential and comparative analysis of aggregated data using a web browser. The current format for the majority of DCC reports (such as the SECMP0122A suite of reports) is as PDF documents and CSV files, which can be large and difficult to navigate. Online access to data will permit DCC Users, who may not otherwise have the technical capability to analyse data provided by DCC, to more quickly and effectively locate the analysis of relevance and gain insights from the data.

Additional support costs for this reporting will be absorbed into the existing Business As Usual (BAU) support structure already in place.

2 Document History

2.1 Revision History

Revision Date	Revision	Summary of Changes
21/07/2022	1.0	Issued to SECAS

2.2 Associated Documents

This document is associated with the following documents:

Ref	Title and Originator's Reference	Source	Issue Date
1	MP176 Modification Report	SECAS	17/11/2021
2	MP176 Business Requirement v0.2	SECAS	17/11/2021
3	MP176 Legal Text v0.1	SECAS	17/11/2021
4	MP176 Preliminary Assessment Request	SECAS	17/11/2021

References are shown in this format, [1].

2.3 Document Information

The Proposer for this Modification is Robbie Macintosh from the Data Communications Company (DCC).

The initial Preliminary Impact Assessment was requested of DCC on 17th November 2021. A second PIA was offered by DCC with the inclusion of a "Customer Portal" or front end to deliver extra data.

3 Context and Requirements

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

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

3.1 Problem Statement

Following the implementation of SECMP0122A, the DCC provides SEC Parties through the SEC Operations Group with industry wide level of reporting on the timings, success or failure of Service Reference Variants (SRVs) relating to key customer business processes. This reporting is an anonymised view of reporting which does not provide customers with a view of their own performance, how they compare with other SEC Parties, or the ability to simply diagnose factors (Devices, Firmware, Geographic Location, Orchestration) that could be affecting their performance against key business processes, which in turn reduces the ability of Users to drive improvement, and the ability of the DCC to assist them in doing so.

DCC is seeking to provide a standardised set of benchmarked reporting to all DCC Users which will enable them to identify their performance for key business processes in comparison to their peers and to enable them to diagnose reasons for poor performance so that they can take steps to address it. The DCC's workshops with DCC Users (including Import Suppliers, Export Suppliers, Gas Suppliers and Electricity Distributors) and via DCC's Quarterly Finance Forum provided a unanimous view that this should be implemented via a SEC Modification as it would mandate receipt of this information by all Parties and therefore offer equal benefit to them.

DCC have indicated that it would be possible to provide access to most of the required data through a Customer Portal or landing zone which Users could use to interactively select their own data and to download the results.

3.2 Business Context and Requirements

During the initial development of SECMP0122, the reporting requirements were dimensioned by SRV and Region. To better understand the shortcomings in performance, the DCC extended the reporting model to Device and Party levels, which revealed a significant disparity in performance levels between DCC Users across several key business processes. As not all SEC Parties have the reporting capabilities to assess their own performance against these key metrics, they have a reduced ability to drive improvement within their own businesses and in their interactions with the DCC. The inability to identify areas of concern can lead to delays in industry processes and have financial and reputational costs across all Parties.

3.3 Business Requirements

This solution will be applied to Smart Metering Equipment Technical Specifications (SMETS) 1 and SMETS2+ Devices.

The DCC will provide anonymised league tables for key business processes, identifying average performance per Smart Energy Code (SEC) Party for that Business Process and identifying the positioning on those league tables of only the SEC Party to whom that report is directed. DCC Customer Analytics Reporting will not share any Device Level data with any party other than the target SEC Party. Any SEC Party which is active in DCC Systems can request a new report to be added to the Customer Analytics Reporting suite, or request a change to an existing report, by making a request to a DCC group mailbox, but additional design, build and test costs will be incurred.

Ref.	Requirement
1	For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate.
2	The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.
3	The DCC shall provide reporting on DCC and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Requirement 1: For the User Roles: Import Supplier, Export Supplier, Gas Supplier, Electricity Distributor and Other User, the DCC will provide inventory reporting identifying the User's Metering Estate

1. A single bar graph for each Device Type (Electricity Smart Metering Equipment (ESME), Gas Smart Metering Equipment (GSME), In Home Display (IHD), Pre-Payment Meter Interface Device (PPMID), and Other identifying each Device Model (on the x-axis) and the volume of meters and of each firmware model (on the y-axis).
2. A single Device Model bar graph giving a breakdown of each SEC Party's estate firmware version, highlighting the report recipient and the industry average

The DCC will provide for each customer a CSV data file identifying all Devices on their estate with the following data fields:

- Device Identifier;
- Smart Metering System (SMS) Identifier;
- Device Type;
- Device Model;
- Firmware version;
- Communication Service Provider (CSP) Id;
- Energy Supplier Id;
- Distribution Network Operator (DNO) Id;
- MPxN;
- Postcode;
- Last Meter Read time/date;
- Last Alert time/date;
- Last Alert Code;
- Commissioned Status;
- Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts);
- Prepayment flag;
- SMETS version;
- whether the Device expires on the Central Products List (CPL) within 30 days;

- Devices whose Security Certificates are due to expire; and
- Change of Supplier Start and End dates.

Note 1: The above request was captured at a DCC Workshop. The DCC believe that this data could run to many millions of rows and therefore suggest some form of exception reporting. The format of this report is therefore to be discussed with customers in the Working Group, however the PIA costs and duration will be based on the full dataset.

Note 2: A limited subset of these data fields would be provided through the Portal. This is noted in the Solution Overview in section 4.3.1 following.

Requirement 2: The DCC shall provide reporting to its Users on the business processes defined in the Customer Analytics Reporting, which will include a view of the Users' performance against anonymised performance data for all Parties in the same User Role.

1. The DCC will report for each of the requirements noted in this section, identifying in separate graphs:
 - A monthly average benchmark of success or failure against other customers operating in the same User Role;
 - A monthly view of Round Trip Time or Alert delivery time, identifying customer best, worst, mean and median against those same metrics at an industry level for other customers operating in the same User Role;
 - A daily average view of success/failure and average Round Trip Time for that customer compared to industry average. Where relevant, performance will be broken down by meter type, Region and SMETS1/SMETS2, and 'Category 1 & 2' Incidents will be highlighted. The report will identify all failures by Reason Code alongside all additional signifiers to enable Users to diagnose common themes.
2. The DCC will provide a monthly CSV data file for each Service Reference Variant (SRV), identifying at an aggregated level all dimensions that Speed, Volume, Payload (SVP) report on:
 - Success/Failure;
 - Failure reason code;
 - Communications Hub Manufacturer;
 - Communications Hub Model;
 - Communications Hub Function;
 - Communications Hub Firmware;
 - Device Type;
 - Device Manufacturer;
 - Device Model;
 - Device Firmware Version;
 - Region; and
 - Round Trip Time.

Requirement 3: The DCC shall provide reporting on DCC and Device Alerts received by an Import Supplier, Export Supplier or Gas Supplier, which will consist of a total of all Alerts and individual reporting for each Alert, to the relevant Users.

Electricity Distributors will receive reporting on the following subset of Alerts:

- AD1 – Power Outage Alert;
- 8F35 – Supply Outage Restored;
- 8F36 – Supply Outage Restored - Outage $\geq$ 3 minutes;
- 8F58 – Supply interrupted on Phase 1;
- 8F59 – Supply interrupted on Phase 2;
- 8F5A – Supply interrupted on Phase 3;
- 8F37 – Supply Outage Restored on Phase 1;
- 8F38 – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F39 – Supply Outage Restored on Phase 2 Restored;
- 8F3A – Supply Outage Restored on Phase 2 Restored - Outage $\geq$ 3 minutes;
- 8F3B – Supply Outage Restored on Phase 3 Restored;
- 8F3C – Supply Outage Restored on Phase 3 Restored - Outage $\geq$ 3 minutes;
- 8F0C – Clock not adjusted (adjustment greater than 10 seconds);
- 81C6 – Clock not adjusted (outside tolerance);
- N12 – Failure to deliver Command to Device;
- N13 – Failure to receive Response from Device;
- N53 – Command not delivered to ESME; and
- N55 – SMETS1 Service Provider (S1SP) Service Request Validation Failure

This reporting will provide the following views:

1. A daily average view of success/failure of Alert sending and average delivery time for that customer compared to industry average.
3. A monthly summary of success compared to industry average.
4. The DCC will provide a monthly CSV data file for each Alert type, identifying at an aggregated level all dimensions that SVP report on:
 - Success/Failure
 - Failure reason code
 - Comms Hub Manufacturer
 - Comms Hub Model
 - Comms Hub Function
 - Comms Hub Firmware
 - Device Type

- Device Manufacturer
- Device Model,
- Device Firmware Version,
- Region,
- Round Trip Time

Reports for the Electricity Distribution role for the Alerts N13 'Failure to receive Response from Device' and N55 'S1SP Service Request Validation Failure' will receive an additional view identifying a breakdown of the Alerts split by Meter Make, Model, Firmware Version.

In addition, the following reports will be produced specifically for the Electricity Distribution role:

- a) Report comparing the daily monitoring of N16 'Device Identity Confirmation' Alerts with N42 'Security Credentials Updated on the Device' Alerts identifying volumes which have met a seven day Service Level Agreement (SLA) for receipt of the N42 following N16 and those that have failed this metric, sorted by Energy Supplier;
- b) Standardised Reporting identifying Power Outage Alerts with no Power Restoration Alerts:
 - i) AD1 with no 8F35
 - ii) AD1 with no 8F36
 - iii) 8F35 with no AD1
 - iv) 8F36 with no AD1

4 Description of Solution

Following workshops and consultations with Users, the DCC Data Science and Analytics (DS&A) team has proposed four application components to be included in the Customer Analytics Reporting suite in accordance with the requirements:

- Inventory data-marts
- Business Process Analytics
- Alert Reporting and Metrics
- Secure online customer access portal with anonymised differential and comparative analysis of aggregated data

The solution does include technical flexibility to add or amend metrics to the reporting suite in future. Such changes would be requested by Service Users and paid for (if appropriate) under a Change Request.

4.1 DCC Data Science and Analytics

DCC's Data Science and Analytics (DS&A) function was formed from a specific sub element of the Technical Operations Centre (TOC). It has particular focus on underpinning the existing TOC capability with dedicated emphasis on utilising the considerable data DCC generates and captures. This team is responsible for all aspects of the data across the Data Analytics lifecycle from initial structuring and organisation, ensuring its timeliness availability across TOC and wider DCC. Within DS&A however, further data-analytical processing techniques are employed in order to derive insights for industry. The DS&A function also has DCC responsibility for its regulatory reporting.

DS&A operate secure and scalable cloud computing with powerful analytic software to help identify and understand how the DCC service is used with objectives to evaluate application execution, message flow and orchestration performance, device, HAN configuration compliance and more. The team is staffed by dedicated DCC sourced system experts, experience data scientists supported by cloud technologists and database developers and administrators.

DS&A have developed much of the DCC operational capability incorporating Service Visualisation of Operational Management dashboards, proactive alerting of operational metrics and anomaly detection systems. It is, however, it's Operations Analytics tools that will be utilised to fulfil this modification. Operational Analytics allow highly accurate monitoring of key DCC KPI's across many aspects of the end-to-end service and is operatable at Device, Meter-point, or transactional request identity level for a forensic analysis of specific behaviour and troubleshooting. It is when such seemingly discreet data is connected and aggregated that allow the correlation of trend analysis and generation of meaningful insights such that will drive this Modification.

DCC DS&A will be responsible for the design, development, implementation and BAU maintenance of the solution for this Modification.

4.2 DS&A Solution Overview

Utilising the data extracts presented by the Enterprise System Interface (ESI) between DSP and DCC, the DS&A team oversee custom written, automated Extract, Transform and Load (ETL) processes to maintain both Inventory and Transactional databases which will underpin the data model as utilised within this Modification. Inventory information, typically device,

meter-point level data is received incrementally every 4 hours, whereas transactional records as logged by Service Audit Trail (SAT), Power Outage & Restoration Timing Logs are received continuously as they are written by DSP. This data is duly written to the database and is fully queryable for use by DS&A analytic systems.

The transactional data records (solicited Service Requests issued by Service Users and unsolicited device and DCC System alerts) are written out to specifically structured data-tables where they combine with dynamically built inventory information to tag critical information about each distinct transaction as follows:

- Responsible Supplier (Energy Participant fulfilling which Energy Role) at time of transaction (Service Request or Alert)
- Originator of ServiceRequest or Destination of Alert
- Responsible Network Operator Participants
- Device Configuration i.e., Device Model, Manufacturer, and the Active Firmware at time of transaction (Service Request or Alert)

Key fields of Service Audit Trail and related Power Outage / Restoration timing logs to be utilised in this Modification are:

- Mode of Operation and Command variant utilised
- Device ID and related Meter-point numbers
- Current lifecycle status, i.e., completed, pending delivery
- Device Execution status, i.e., Success, Failure
- Time spend in Northbound direction flow
- Time Spent in Southbound direction flow
- Start time of transaction (incorporating Power Outage and Restoration timestamps where relevant)
- End/Latest time of transaction (incorporating latest Power Outage and Restoration delivery timestamps and ENO Acknowledgement timestamp)
- Communications Service Provider utilised
- Response Code
- SLA Target for the Transaction for both DSP and DCC end to end
- SLA Performance Pass / Fail
- SLA Exclusion Time

Calculated metrics for this Modification include:

- Round Trip Time (distinct per transaction)
- Mean Round Trip Time (aggregated)

When aggregated the following optional metrics can be calculated:

- Max, Min, Median, Sum of Round-Trip Time

4.3 Solution Constraints and Changes

DS&A have reviewed the requirements and concluded they can be met in full and delivered using existing data available and subsequently working within the constraints of the current solution should involve no commercial change to the DCC Solution, although there will be a direct impact on support and maintenance.

If data sources are identified in the future that may help customers in managing performance, DCC will seek to introduce this source and adapt the reporting solution to accommodate, DCC reserves the right to cover any costs in the obtaining, productionising and presenting this information

4.3.1 Delivery Mechanism

Across all three reporting requirements stated within this Modification, DCC will publish all relevant files at the stated frequency to each Service User's secure SharePoint repository. The files will be of type PDF with exception for the three stated data files which will be in CSV format. Where possible and upon request, other file formats may be accommodated where a Service User has a different and specific preference.

DCC will also produce and support an online portal service offering for customers for the aggregated performance and reporting data which will contain interactive versions of the PDF type documents for customers to interact with and download from.

DCC would not publish the whole content of the Inventory in the Portal to reduce the volume of data held, and not all fields will be available in the Portal as shown following.

Requirement 1 Data	CSV Files	Portal
Device Identifier	✓	✗
Smart Metering System (SMS) Identifier	✓	✗
Device Type	✓	✓
Device Model	✓	✓
Firmware version	✓	✓
Communication Service Provider (CSP) Id	✓	✓
Energy Supplier Id	✓	✓
Distribution Network Operator (DNO) Id	✓	✓
MPxN	✓	✓
Postcode	✓	✗
Last Meter Read time/date	✓	✓
Last Alert time/date	✓	✓
Last Alert Code	✓	✓
Commissioned Status	✓	✓
Power Outage Alert Count in last month (including Polyphase Supply Interrupted Alerts)	✓	✗
Prepayment flag	✓	✓
SMETS version	✓	✓

whether the Device expires on the Central Products List (CPL) within 30 days	✓	✗
Devices whose Security Certificates are due to expire	✓	✗
Change of Supplier Start and End dates	✓	✗

The Portal will also provide data for each Service Reference Variant (SRV), identifying at an aggregated level all dimensions that Speed, Volume, Payload (SVP) can report on for the SRVs described in Requirement 2 on page 7 above.

For alerts the portal will provide supporting data identifying at an aggregated level all dimensions that SVP report on, as described in Requirement 3 on page 8 above.

4.4 Working Methodology

During the requirement gathering and refinement, principally as part of the SECMP0122 process which has driven this Modification requirement, the DCC and SECAS hosted workshops with the Working Group. These workshops aimed to validate the proposals in the Operational Metrics Review (OMR) in terms of the viability of implementing the recommendations, to refine the requirements further, and to enable fast delivery of new requirements and improvements.

It is proposed that the reporting will be delivered by the DCC TOC via an iterative delivery mechanism, whereby a Minimum Viable Product (MVP) will be available in a first prototype release in the Implementation phase and following consultation with the Working Group, further functionality can be delivered in a fast and frequent continuous delivery mechanism until the final product is complete, using the same methodology as SECMP0122.

4.5 Data Delivery, Testing, and User Acceptance

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 CSPs.

For any subsequent changes to requirements, external data provided by the Service Providers will require a limited technical change to reflect the provision of the data to the DCC. In some cases, mostly relating to the SMETS1 Service Providers (S1SPs), there is no current data provision, so a data transfer mechanism will have to be developed.

5 Impact on Systems, Processes and People

As defined the change included in this document is confined to data already within the DCC, with no expected changes impacting SMETS1 or SMETS2 Service Providers.

5.1 Infrastructure Impact

No impact to existing infrastructure, however, to meet the requirements within this modification, additional cloud instances of DS&A statistical computing platform is needed for monthly processing and shall be recorded as an explicit line item cost.

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

5.2 Security Impact

The solution will need to ensure that only data related to the relevant SEC Party is made available, and will be security assured during the implementation phase through standard DS&A reviews, however no impact from such assessments is anticipated.

5.3 Data Science & Analytics Team and Wider DCC Operations

The full range of activities required to implement these requirements including design, development, testing, and implementation would be performed by DCC DS&A utilising in-house contractors and permanent staff. There will be a slight increase in the Full Time Equivalents (FTEs) required to do this and support, maintain, and deliver the reporting monthly, which will be similar to that noted in the First PIA for this Modification.

6 Implementation Timescales and Approach

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.

This work should be completed within six (6) months of approval.

6.1 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 require the testing services of the System Integrator or the CSPs.

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.

7 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 and includes the costs to provide the results through a Portal. 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.

7.1 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.

£	Design, Build and Test
Operational Metrics	£190,000 with a tolerance of +/- 20%

Based on the existing requirements, the fixed price cost for a Full impact Assessment is £10,000 and would be expected to be completed in 30 days. This FIA would include all considerations from the previous PIA and FIA without duplication, such that the additional cost of £10,000 would be reflective of the Portal functionality only.

Appendix A: Glossary

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

Acronym	Definition
BAU, BaU	Business As Usual
CPL	Central Products List
CSP	Communication Service Provider
CSV	Comma Separated Variable
DCC	Data Communications Company
DNO	Distribution Network Operator
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
FIA	Full Impact Assessment
FTE	Full Time Employees
GBCS	Great Britain Companion Specification
GSME	Gas Smart Metering Equipment
I&C	Installation and Configuration
IHD	In Home Display
KPI	Key Performance Indicators
MVP	Minimum Viable Product
OMR	Operational Metrics Review
PIA	Preliminary Impact Assessment
PIT	Pre-Integration Testing
PMR	Performance Measurement Report
PPMID	Payment Meter Interface Device
ROM	Rough Order of Magnitude (cost)
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	Systems Integration Testing
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specification
SMS	Smart Metering System
SRV	Service Request Variant
SVP	Speed, Volume, Payload
S1SP	SMETS1 Service Provider
TOC	Technical Operations Centre
UIT	User Integration Testing