RETAIL ENERGY CODE

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01	Initial Assessment Report
02	Preliminary Change Report
03	Final Change Report

CHANGE REPORT

R0080 – IMPROVEMENTS TO 'FAILED TO DELIVER' CSS MESSAGES

CHANGE REPORT	FINAL
DOCUMENT VERSION	1.0
ISSUED DATE	19/07/2024
DOCUMENT APPROVAL STATUS	PRE-VOTE

RESPONSIBLE COMMITTEE	TECHNICAL EXPERT PANEL	CHANGE PATH	SELF GOVERNANCE
PRIORITY STATUS	MEDIUM	URGENCY	STANDARD

DEADLINE FOR ALTERNATIVE CHANGE PROPOSALS	10/05/2024

LEAD CHANGE ANALYST



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CHANGE OVERVIEW

Since Central Switching Service (CSS) Go-Live, some messages have not been delivered due to failures of CSS User's gateways resulting in CSS exhausting the 12-hour retry period.

The issue is caused when CSS Users take their gateway off-line for longer than 12 hours for maintenance or they experience an unplanned outage. The baseline design does not currently support any capability to automatically resend messages once gateway connectivity is restored by the CSS User.

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	High Impact: N/A
	Medium Impact: CSS Users, Switching Data Service Providers, CSS Provider, Consumers.
	Low Impact: N/A

CODE MANAGER'S RECOMMENDATION

The Code Manager recommends Change Proposal R0080 is **APPROVED** for implementation on **27 June 2025**.

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BACKGROUND

1 SUMMARY

Since CSS 'Go-Live,' messages have not been successfully delivered to their intended recipient. This can be due to a CSS User encountering an unexpected, extended period of gateway outage or the message being rejected by the target system. This can occur for either a message structure or business reason whereby the data provided is not acceptable.

For messages which are not successfully delivered, the CSS Provider is unable to resend these to the Users once their gateway is back online. There is a restrictive workaround which results in the CSS Provider attempting to provide some of the missed data to CSS Users. This is time consuming and may result in delays to messages being processed, affecting Consumer Switches.

In 2023, one Supplier had an incident involving certificate renewals which resulted in circa 60,000 messages failing to deliver. In this instance, the CSS Provider worked with the Supplier to try and provide the data, but this was a lengthy process. During an average 30-day period, there are circa 10,000 messages which fail to deliver, where CSS Users raise incidents requesting this data. Currently, the CSS Provider attempts to provide some of the data, but it is a lengthy process, and messages are not re-issued. CSS End Users are also not notified if there are messages which fail to deliver.

For rejected messages, Users are not currently provided with visibility of these rejections (separate to their own system error codes), however incidents are manually raised to Parties where appropriate for them to act.

This Change Proposal seeks to find a solution to send those failed to deliver messages which were triggered during an outage and therefore could not be sent. This will occur once the User's gateway is back online, and it will ultimately provide an enduring, sustainable solution for rejected messages.

2 PROBLEM STATEMENT

Following an unexpected or extended period of gateway outage for a CSS User, there is currently no automated process to resend any CSS messages from the CSS Provider that were triggered during the period of outage. Where Parties proactively raise incidents to request their data, some of this is provided but Parties are not notified of these missing messages. This could result in Consumer Switches being delayed due to messages not being processed.

3 USER STORIES

REF.	USER STORIES
CONSUMER USER STORIES	
C1	As a Consumer, I want the Switching process to work successfully, so that I can switch Energy Supplier without delays or issues.

MARKET PARTICIPANT USER STORIES	
M1	As the CSS Provider I want the messages I send to CSS Users to be received and processed successfully, so that there is no interruption to the Switching process or the Consumers' Switching experience.
M2	As the CSS User I want to receive CSS messages in a timely manner following any outage of my own gateway or systems, so that there is no interruption to the Switching process or the Consumers' Switching experience.

PROPOSAL

4 SUMMARY OF ANALYSIS UNDERTAKEN

R0080 has been developed through discussions across several Technical Change Workshops during 2023 with the CSS Provider, Gas Retail Data Agent (GRDA), Electricity Retail Data Agent (ERDA) and the Code Manager being in attendance. The requirements were agreed as part of these workshops and subsequently the Preliminary Impact Assessment (PIA) request was issued on 12 May 2023.

Following this response, further discussions were held on the requirements and potential solution options with the final discussion taking place at the Technical Change Workshop held on 10 October 2023.

The Detailed Impact Assessment (DIA) request was then provided to the CSS Provider on 24 October 2023 and an initial walkthrough of the outputs from this assessment took place at the Technical Change Workshop on 09 January 2024. This was prior to the final submission of the DIA and the subsequent request for Party Impact Assessments.

5 PROPOSED SOLUTION

The following design principles are key features of the solution.

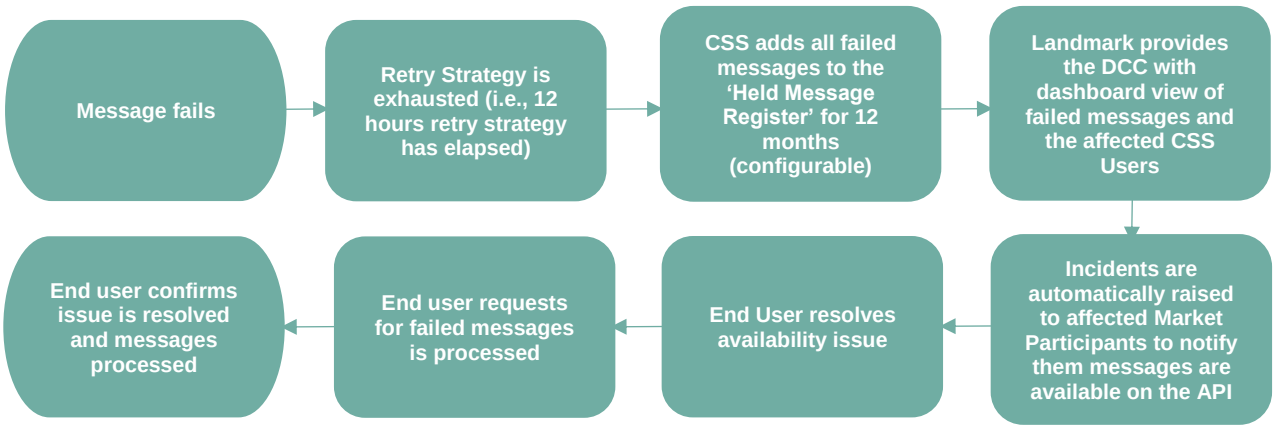
- The solution will be applicable to all Parties that receive messages from CSS (i.e., Switching Data Service Providers (SDSPs) and CSS Users).
- Messages exhausting the retry strategy after the 12-hour retry period will be placed in a 'held message register', for example, if the endpoint is offline for an extended period of time. The message recipients will have direct access to their held messages via an API.
- The new API will be made available to allow Parties to request a resend of messages that have failed to deliver (and are therefore in the 'held message register'). The API will be described in an updated Physical Interface Design document (PhID).
- Given the dynamic nature of message delivery, interactive dashboards will be used to display details instead of static reports. Three dashboard views will enable authorised parties (DCC and Landmark) to view and monitor. CSS will then automatically notify impacted Market Participants that they have messages that have been added to the 'held message register.'

- The notification process will be facilitated by raising tickets in the CSS Zendesk system. Once raised, these tickets will be auto forwarded to the DCC ServiceNow system which, based on the ticket attributes, will forward the tickets for the attention of the appropriate Market Participants further downstream.
- An API will be used to enable a Market Participant to request re-queuing of messages that have failed to be delivered to them, even after multiple delivery attempts in accordance with the system retry policy. Re-queued messages will be the original messages that failed to be delivered to the requesting party, inclusive of the correlation id, event id and event date. Re-queued messages will be sent to the webhook URL currently registered by the calling party to receive messages of the designated event type at the time that the resend attempts take place.
- Messages will be re-queued in ascending event date order such that the oldest messages are added to the delivery queue first.
- The solution will provide the required information upfront allowing users to resolve outstanding messages via data already available.
- Use of the API will be optional for all Parties. Parties are not obligated to retrieve messages that fail to deliver but manual resends via Service Desk Tickets will only be available where the API cannot be used.
- Messages added to the register are subject to a Time To Live (TTL) that limits the period messages remain on the register and are available for automated resend. The TTL is set to be a configurable number of months with an initial setting of 12 months.
- It should be noted that CSS will still retain messages that exceed the undelivered message backlog window and that they will be available for inclusion as part of a manual requeuing procedure as currently used in lieu of the near-automated solution becoming available.
- In addition to providing a notification and resend capability to Market Participants for undelivered messages, CSS will also maintain a log of rejected messages (error code 400) and of Market Participant requests to resend held messages. Together with the held message data itself, this information will provide an overall view of messages that have not been delivered successfully which will be made accessible via dashboards.
- This rejected message log will enable DCC operations to have a complete view of all failed to deliver messages and take the relevant actions to resolve these issues.

Resend Queue Process Flow

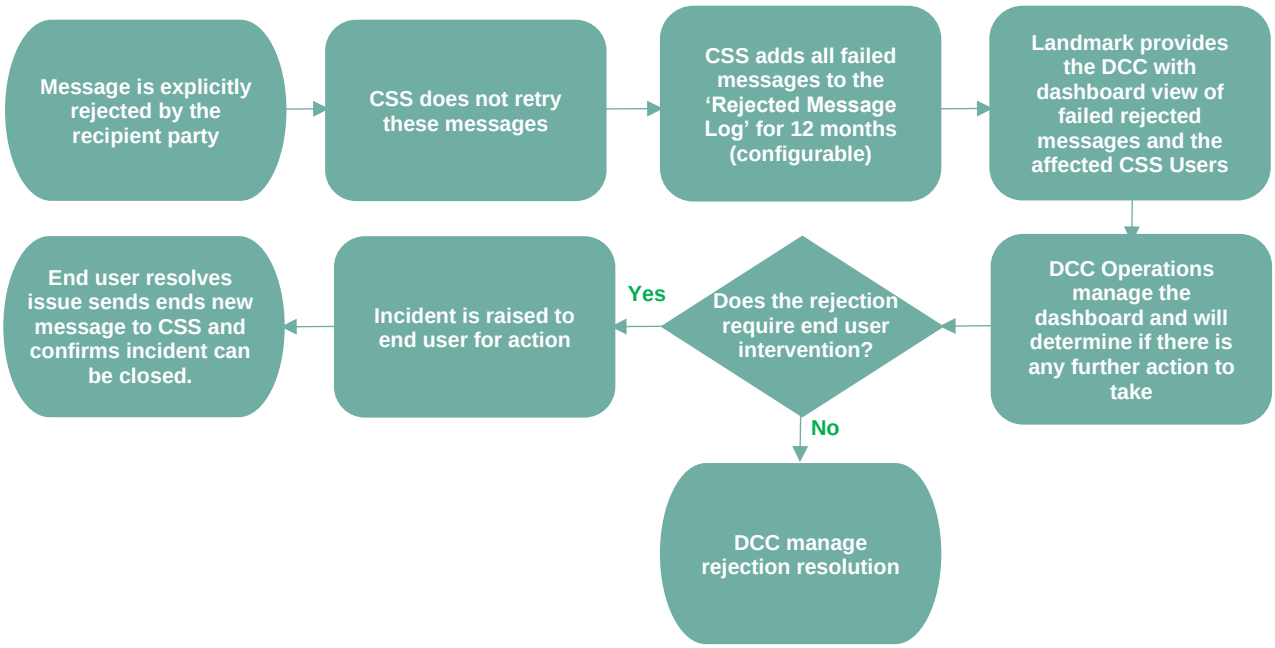
The diagram below describes the high-level process for CSS messages which CSS receives the following response code:

- 424 Failed Dependency
- 429 Too Many Requests
- 500 Internal Server Error
- 502 Bad Gateway
- 503 Service Unavailable
- 504 Gateway Timeout



Process for Rejected Messages (400 Response Codes)

The diagram below describes the high-level process for rejected messages where CSS receives a 400-response code.



5.1 MARKET-WIDE HALF HOURLY SETTLEMENT

DESIGN	DATA SPECIFICATION	DRAFTING
No impact or risk to MHHS design as confirmed by the DCC.	No impacts have been identified to the MHHS changes to the Data Specification.	No direct impact to MHHS code drafting.

6 DRAFT LEGAL TEXT

The legal text changes to deliver the proposed solution to R0080 can be found here.

7 SUMMARY OF IMPACT ASSESSMENT ACTIVITY

7.1 SERVICE PROVIDER IMPACT ASSESSMENTS

The CSS Provider carried out a Preliminary Impact Assessment (PIA) on 05 June 2023. It was recommended that solution design be incorporated into the Detailed Impact Assessment and £29,023.43 was approved to enable this.

The process of completing design up front has ensured that all design documentation was ready to be impact assessed by industry, well in advance of the implementation of the change. This enables Parties to assess the solution in full and ensures that the Code Manager can make a more informed decision on its suitability.

The design and Detailed Impact Assessment was completed on 25 January 2024.

CSS PROVIDER	• The total cost for build, test and deployment is £437,977.22. This is inclusive of an ongoing cost of approximately £590 per month and calculated from proposed production in November 2024 to the end of contract at approximately 32 months. Including the costs for the already completed design, this cost is £467,000.65. • The solution will require approximately 41 weeks from mobilisation to implementation. • The CSS Provider recommends that the GRDA, ERDA, DCCSM/ECOS and three Suppliers take part in User Interface Testing (UIT).

Following the completion of the impact assessment, the CSS Provider outlined that there is the opportunity for an interim solution to be provided to CSS Users. This would enable them to be manually provided with any missed messages until the enduring solution is in place.

CSS PROVIDER (INTERIM SOLUTION COSTS)	• It would cost £5,000 per manual message run. The CSS Provider would manually raise incidents to each MPID which had failed to deliver messages within the month and raise an incident to allow them to retrieve their messages. • The CSS Provider is proposing to run this 24 times until the enduring solution is completed, making a total of £120,000. • This is an optional addition to R0080, and feedback was requested from Parties directly as part of the consultation. *Following consultation, it has been concluded that there was not enough support for the Code Manager to recommend proceeding with the interim solution.*

7.2 REC PARTY IMPACT ASSESSMENTS

A Party Impact Assessment was published on 02 February 2024 and closed on 23 April 2024. Two Distribution Network Operators (DNOs) responded and there was one response from the GRDA.

DISTRIBUTION NETWORK OPERATORS	• The respondents raised questions on the process for the rejected messages log (400 response codes) as a result of some ambiguity from within the CSS Failed To Deliver Detailed Design (R0080) v1.0. In response to those questions, the detailed design document has now been updated to clarify the process and highlight the increased visibility Parties will receive as a result of the Rejected Message Log. • It was noted that resources may be restricted due to current and ongoing testing for the Market-Wide Half Hourly programme but acknowledged the flexibility of this change meant that their adaptor provider could implement the capability at their own pace.
GRDA	• The respondent shared a number of clarification questions on the design which has helped ensure that the design is robust and well rounded. • The GRDA expressed an interest in supporting the CSS with testing the solution which was gratefully received by the Code Manager. • It was also noted that the flexibility of this solution meant that they could progress at their own pace should they wish to implement post CSS Go-Live.

8 DELIVERY AGAINST CHANGE PROPOSAL PLAN

All activity has been completed within the timescales as defined in the latest Change Proposal Plan. The Change Proposal Plan can be found here.

9 KEY RISKS, ASSUMPTIONS, ISSUES AND DEPENDENCIES

9.1 RISKS AND ISSUES

No.	RISK	NOTES	MITIGATION
R01	There is a risk that Parties do not engage with the solution and do not access the API to release their failed to deliver messages. This could		Ensure high visibility of new functionality within Suppliers, promoting the self-service tool. DCC will also raise incidents with CSS End Users and

	mean that systems are out of sync and Switches could fail if messages are not re-issued.		monitor their adherence to resolving incidents as per their Incident Management Process.
R02	There is a risk that messages are caught in an infinite loop of failing to send, moving to the holding table, and failing to send again. This could increase message volumes and create inefficiencies in processing them.		Clear guidance will be provided to End Users when they are requesting messages to be resent. This will help to ensure that errors have been fixed before they are reissued.

9.2 ASSUMPTIONS AND DEPENDENCIES

No.	ASSUMPTION	NOTES	HOW/WHEN TO VALIDATE
A01	Testing in UIT-B is optional for CSS Users and SDSPs.		Validated at DIA Stage
A02	The number of Parties using UIT-B for this testing will be capped to 6, and the duration will be fixed at 4 weeks.	It is recommended that the following Parties undertake testing in UIT: 1 x GRDA 1 x ERDA 1 x DCCSM/ECOS 3 x Suppliers	Validated at DIA Stage
A03	If no Parties opt to test in UIT-B, the solution will still be deployed to Production on the basis of successful SIT testing.		Validated at DIA Stage
A04	Non-Functional Testing of this solution is not required.		Validated at DIA Stage
A05	It is assumed that R0080 and MHHS testing can coexist in the UIT-B environment.	The SI will manage allocation of test data used in R0080 using the Test Data Tool and excluding the 10,000 MPANs assigned to MHHS.	Validated at DIA Stage

10 PROPOSED IMPLEMENTATION DATE AND APPROACH

PROPOSED IMPLEMENTATION DATE	27 June 2025	PROPOSED IMPLEMENTATION APPROACH	BIG BANG

The CSS Provider has submitted a plan for build and test which will take 41 weeks. At the time of the Preliminary Change Report, there was the opportunity to meet the February release however, it has since been confirmed that this is not possible. A June 2025 Release has now been proposed. If there are delays to the MHHS Central Systems ready for migrating MPANs Go-Live and this conflicts with the implementation of R0080, this Change Proposal will be implemented at the next appropriate release date following MHHS implementation.

11 SUMMARY OF CONSULTATION RESPONSES

A consultation was circulated on 10 May 2024 to obtain views on the Preliminary Change report link. Five responses were received, four from Energy Suppliers and one from a DNO. The responses have been consolidated and comments provided by the Code Manager. This can be found here.

The key themes from these responses have been summarised and set out below.

11.1 SUMMARY OF RESPONSES

11.1.1 COMMENTS ON THE SOLUTION AND LEGAL TEXT

All respondents agreed that the solution addresses the problem statement and one Energy Supplier noted that the functionality would be extremely useful and negate the need for workarounds.

Views were mixed on support for an interim solution. One DNO and one Energy Supplier were supportive and there was one further supportive response in principle. The other two respondents were not supportive due to available workarounds and lack of concerns to date alongside the additional cost.

No concerns were raised on the proposed legal text.

11.1.2 BENEFITS RELATIVE TO IMPLEMENTATION AND OPERATIONAL COSTS

Two respondents noted that costs would be incurred to implement the solution and that more work would need to be done to fully scope, understand and review these costs. All other respondents noted that no significant costs would be incurred.

All respondents agreed that they could identify benefits for implementing the change, even those who had not been adversely impacted to date. The benefits noted included:

- Timely receipt of messages and no requirement for workarounds;
- Improved customer experience and data accuracy;

- Reduced resource expenditure;
- Reduced risk of failed registrations; and
- Increased utility post MHHS implementation.

11.1.3 CASE FOR CHANGE AND CODE MANAGER'S RECOMMENDATION

When asked about the business case for the Change Proposal, four respondents agreed that there was a positive business case to progress R0080. However, one respondent noted that whilst it was supportive of improvements to the Switching process, the number of rejected Switch messages did not warrant the quoted costs.

11.1.4 IMPLEMENTATION APPROACH AND DATE

All respondents agreed with the proposed implementation date of 28 February 2025 at the time of the Preliminary Change Report. Since the consultation, the Code Manager is now recommending a 27 June 2025 release date as this will ensure Parties have the required 6-month lead time and provides the required time for the CSS Provider to implement the solution.

12 SUMMARY OF AMENDMENTS MADE FOLLOWING CONSULTATION

No amendments were made to the legal text or solution design following consultation, however based on feedback, the Code Manager has decided to not progress with the interim solution, and this has been removed from scope. The Code Manager has also decided to recommend the June 2025 Release date as outlined above.

13 BUSINESS CASE ASSESSMENT

13.1 COST BENEFIT ANALYSIS

	DESIGN	BUILD, TEST AND IMPLEMENTATION COSTS	ONGOING OPERATIONAL COSTS
CSS PROVIDER	£29,023.43	£419,097.22	£18,880 calculated for the contract life or approximately £590 per month

REC BUDGET APPROVAL SECURED FOR CENTRAL SYSTEM COSTS	19/06/2024

13.2 BENEFITS

Data has been received by the CSS Provider which indicates the number of undelivered messages which would be addressed through the R0080 solution.

Month	Number of messages not delivered
September 2023	1744
October 2023	16
November 2023	3888
December 2023	59
Total over 4 months	5707
Potential over one year	**17,121**

INTANGIBLE BENEFITS	BENEFITS DESCRIPTION
Improved data accuracy and system alignment	CSS Users will be automatically notified of any failed to deliver issues by an incident being raised to them and confirming that action needs to be taken to retrieve the messages. There is currently no visibility (outside of any individual user system monitoring) that these messages have not been received by End Users. CSS will only attempt to retrieve some of the missing data for Users if the User identifies the issue and raises the ticket. This new automated method will enable Users to ensure that there is continuity with their own system and CSS and quickly put right any issues following their gateway being offline.
Reduced risk of detriment to Consumer Switching and billing	Where messages may fail to deliver or be rejected, these could be messages which affect Consumer Switching. Within the current process, an end party may be unaware of the message failure or rejection and therefore a Switch may fail due to messages not being received by the end party and action not being taken quickly enough to resolve it within the Switching window. With automatic notification, CSS End Users will be able to use the self-service functionality as soon as they are ready, lowering the risk of delays to rectifying any issues.
Flexibility of use	This functionality is optional for Users, allowing the End Users the flexibility to connect to the API when ready. For CSS Users who may not have the capacity to build connections to the API before MHHS, they can connect to the API when capacity is available.
Improved data accuracy and system alignment	CSS Users will be automatically notified of any failed to deliver issues by an incident being raised to them and confirming that action needs to be taken to retrieve the messages.

	There is currently no visibility (outside of any individual user system monitoring) that these messages have not been received by End Users. CSS will only attempt to retrieve some of the missing data for Users if the User identifies the issue and raises the ticket. This new automated method will enable Users to ensure that there is continuity with their own system and CSS and quickly put right any issues following their gateway being offline.

13.3 COST BENEFIT ANALYSIS SUMMARY

With the information gathered from all Impact Assessments, Users are not currently proactively notified of messages which fail to deliver. It is reliant on Users identifying these issues themselves and reaching out to the CSS Provider for some limited data to allow them to reconcile the system. This is not good practice and therefore the enduring solution provides a near-automated resolution to both notify CSS Providers of failed to deliver messages which are eligible for resend and adds a process for rejected messages. This provides a mechanism to ensure accurate and aligned data in all systems, removes customer detriment from inaccurate billing and improves Switching confidence.

Whilst there is a small ongoing annual cost to the industry, the intangible benefits described represent a positive case for change.

Following the consultation responses, the Code Manager has determined that there is no business case for the interim solution, and this has been removed from scope. However, due to the benefits anticipated from the solution and noted within the consultation responses, most respondents agreed with the Code Manager that there was a positive business case to progress the enduring solution.

14 CASE FOR CHANGE

14.1 SELF-GOVERNANCE

The Code Manager considers that there is a positive case for change to implement this Change Proposal, on the basis that the proposed solution:

- Is both viable and possible to implement, and it appropriately resolves the problem statement;
- Enables CSS End Users to gain access to the solution in the future when required;
- Facilitates accurate data amongst the CSS and End User systems; and
- Creates a more positive outcome for Consumer Switching.

15 CODE MANAGER'S RECOMMENDATION

Based on the detail provided within this report, the Code Manager considers that a positive business case can be made for implementing this solution and recommends that the Technical Expert Panel:

- **APPROVE** the proposed change solution;
- **APPROVE** the proposed implementation approach; and
- **APPROVE** the proposed implementation date of **27 June 2025**.

16 APPENDIX

CHANGE PROPOSAL	Link
LEGAL DRAFTING	Link
CONSOLIDATED IMPACT ASSESSMENT RESPONSES	Link
CONSOLIDATED CONSULTATION RESPONSES	Link
ANY OTHER DOCUMENTS / LINKS	Solution Development Report CSS Interface Design Specification CSS Failed to Deliver Detailed Design Business Data Validation Rules

17 GLOSSARY

TERM	DEFINITION
Central Switching Service (CSS)	means the Systems and processes provided or procured by the CSS Provider for the purpose of providing the Address Management Service and the Registration Service.
Consumer	means any person supplied (or seeking a supply) of Energy at an RMP (whether or not that person also exports or is seeking to export electricity at an RMP).
CSS Provider	means the DCC when performing functions under or in relation to this Code (but always excluding its functions under the Smart Energy Code and its roles as CSS Systems Integrator, SI Provider and Switching Operator), including in respect of the Central Switching Service and including in effecting the design, build and testing of any System that will allow it to perform functions under this Code after the CSS Go-Live Date. This role is the CSS Procurer and Manager

TERM	DEFINITION
	function as described in the E2E Data Migration Plan, E2E Integration Plan, E2E Post Implementation Plan, E2E Testing Plan, E2E Transition Plan: Implementation Approach and E2E Transition Plan: In-Flight Switches Approach.
CSS User	means each organisation which is Qualified to use the CSS, together with each Switching Data Service Provider (other than the CSS Provider) the categories of which are set out in the Central Switching Service Schedule.
Electricity Retail Data Agent (ERDA)	means a provider of a DNO's Electricity Retail Data Service.
Energy Supplier	means a person which is either or both an Electricity Supplier and/or a Gas Supplier.
Gas Retail Data Agent (GRDA)	means the provider of a Gas Transporter's Gas Retail Data Service.
Market Participant	means a participant in either or both of the gas and electricity markets of Great Britain, each of which is identified by a Market Participant Role.
Switch	means a change to the Registered Supplier for an RMP.
Switching Data Service Providers (SDSPs)	means the CSS Provider, the SMDSP (in respect of the services provided under the Smart Energy Code), the Enduring Change of Supplier Service Provider (in respect of the services provided under the Smart Energy Code), the Gas Retail Data Agent, the Electricity Retail Data Agents, and the Enquiry Service Providers.