D-4.1.6 E2E Operational Choreography

Ofgem Switching Programme

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Overview:

This document sets out the processing time periods for key events (system transactions) for CSS and the supporting systems in the new switching arrangements.

The document identifies those transactions where a prescribed timeframe will be necessary including those that must be undertaken in real-time. Where appropriate, a schedule will be defined to demonstrate how the preceding and succeeding dependencies of each transaction will be satisfied.

This document provides illustrative information on how central systems will operate. These requirements may be updated as the design progresses from the logical to the physical level. In particular, updates may be required as a result of procurement of the CSS as well as development of the changes needed to other central data services, such as UK Link and MPAS, which are being progressed under the UNC and MRA.

Associated documents

[1] D-4.1.2 E2E Detailed Design Models
[2] D-4.1.5 E2E Solution Architecture

Version control

Revision Date	Version	Summary of changes
15/02/2018	V1.0	Published for DB3.
22/06/2018	V2.0	Non-material changes to improve document for publication in DB4.
30/11/2018	V2.1	Changes for CR-E06

Contents

Executive Summary

Purpose

The purpose of this document is to describe the processing periods for key events and identify transactions where a prescribed timeframe will be necessary. An analysis of preceding and succeeding dependencies is a key input to this. The result of laying out this "choreography" is a confirmation of the business integrity of the proposed end-to-end solution, where processes and interactions happen in a timely manner, under the new switching arrangements.

This document is intended to be used alongside the Switching Design Repository[1], held in ABACUS, which contains full details of the processing and dependencies which are described here at a high level.

Conclusions

In reaching the conclusions, consideration has been taken of both:

- The overall switching timescale; and
- The detailed dependencies between processes and interactions between systems.

The main conclusions concern the timings by which existing systems and processes will need to interact with the new Central Switching Service (CSS); and where required any resulting changes to those systems are identified. Physical interface design, including "batch file" versus "messaging" considerations, are addressed within D-4.1.5 E2E Solution Architecture [2] document - not here.

This work has concluded that changes will need to be made in several of the existing Central Data Services. UK Link and MPAS may continue to run their update processes on a batch overnight basis, but both services must apply updates in a specific sequence. Their processing cycles should be aligned, for consistency.

Smart Metering will need to change to use a message-based interface to CSS (the current RDP daily feed is file-based) and will need to change the timing of the transmission to the meter of future-dates Change of Supplier commands.

The CSS/ECOES and CSS/DES links (or CSS to any future MIS) will similarly be message-based interfaces, with updates being applied in real-time. This will ensure consistency of information across the Central Data Services, but will cause some temporary inconsistency as UK Link and MPAS lag behind during the day.

1. Introduction

Scope and Approach

1.1. This document is based on the end-to-end solution[1], to ensure that the component systems interact in a coherent way. The business scenario for each switch begins with the consumer agreeing terms with the gaining supplier and ends when an opening and closing bill has been sent to the consumer, considering the major interactions between the systems during this process. The basic business switching scenarios considered are:

- Traditional credit meter;
- Traditional prepayment meter;
- DCC-enrolled credit meter; and
- DCC-enrolled prepayment meter.

1.2. There are a further three scenarios – see below - that do not involve switching specifically; two that involve registration and deregistration of a supplier; and a third that involves updates to RMP data not related to a switching process. These are described further in the *Functionality Common to both Electricity and Gas* section below.

- Initiation and initial registration of a Registrable Measurement Point (RMP);
- Termination of an RMP; and
- Update RMP details e.g. changes of agent.

1.3. A "traditional" meter is any meter (on domestic and non-domestic premises) that is not DCC-enrolled. This covers smart-type meters, such as AMR, half-hour electric, daily metered gas, as well as SMETS1 meters that are not DCC-enrolled. A DCC-enrolled meter may be either a SMETS1 or a SMETS2 meter.

1.4. This document takes a top-down approach to identifying the major dependencies between processes and systems. The Switching Design Repository[1] contains a more detailed view of the nature of, and data passed in, each interaction between systems. The intention is not that this document replaces information in

the Switching Design Repository[1], but supplements it by presenting it in a high-level business view.

1.5. This document is part of a suite of documents that should be read in association with the Switching Design Repository[1]. This document provides input for the D-4.1.5 E2E Solution Architecture[2] document, particularly for the nature of the interfaces between CSS and the other Central Data Services. If there is a contradiction between the Switching Design Repository[1] and this document, then the Switching Design Repository[1] will take precedence.

Current Switching Arrangements

1.6. The Introduction section briefly describes how the current arrangements work for switching in both electricity and gas.

New Switching Arrangements

1.7. The New Switching Arrangements section describes how the new arrangements are proposed to work for switching both electricity and gas, followed by a section on processes common to both fuel types.

1.8. The section describes the operational stages with timelines for a switch during each stage:

- Operation during the transitional stage – suppliers will be expected to complete a switch within five working days (or a shorter period, should the gaining supplier be able to support this);
- Operation post-transition - next-day switching; and
- Same-day switching is also considered, since this capability will be designed into the CSS from the outset.

1.9. The Approach and Assumptions section gives information on assumptions made and conclusions drawn from the work. It states requirements for interfaces and for changes necessary to other Central Data Services such as ECOES (electricity) and DES (gas).

2. Current Switching Arrangements

Introduction

2.1. The main switching business scenarios are:

- Traditional credit meter;
- Traditional prepayment meter;
- DCC-enrolled credit meter; and
- DCC-enrolled prepayment meter.

2.2. All follow similar processes; switching a traditional credit meter has been chosen as the scenario to be described in detail, since this is the most common current scenario. The description comprises:

- A list of the activities involved, with a brief description of each activity; and
- A Gantt chart illustrating dependencies between the activities.

Switching in Electricity

Switch Traditional Credit Meter

2.3. The following activities take place:

1. **Agree terms** - The consumer contacts the gaining supplier and together they agree terms and a Supply Start Date (SSD).
2. **Cool off** – A domestic consumer has 14 calendar days from the day after entering into a contract to withdraw from the new arrangement. If the consumer does so, the switch is withdrawn.
3. **Request switch** – The gaining supplier sends a switch request to MPAS, typically within a few days of the agreement with the consumer. The SSD of the request can be the following working day or up to 28 calendar days ahead. Typically, the SSD is between 14 and 21 days in the future. This request is submitted as a batch file. During each working day, MPAS collects the files received up to 18:00 and at some point before 06:00 the following day, processes all the files received since the previous batch run.

Files received after 18:00 are considered to have been submitted on the following working day.

4. **Notify of pending loss** – MPAS notifies the losing supplier of the pending loss and its effective date following the next overnight batch run.
5. **Appoint agent(s)** – The gaining supplier appoints agents, i.e. a Meter Operator (MOP), Data Collector (DC) and Data Aggregator (DA), using data flows over the Data Transfer Network (DTN) where required. Execution of the switch is not dependent on completion of agent appointments.
6. **Determine settlement parameters** – The gaining supplier receives the current settlement parameters such as Measurement Class (half-hourly/non-half-hourly) from MPRS and may change them. Execution of the switch is not dependent on this process.
7. **Raise objection** – The losing supplier has a fixed "objection window" in which to raise an objection to the switch (5 working days, with the first day being when the loss notification is received). An objection is typically raised either because of contractual issues (non-domestic consumers) or debt issues (domestic consumers), related RMPs, or because of a Customer Requested Objection (CRO) where the consumer indicates to the losing supplier that the switch is erroneous. If no objection is raised within the window, then the losing supplier cannot stop the switch on these grounds. If an objection is raised within the window, then a resolution process starts after the next batch run. If the issue is resolved, the losing supplier removes the objection and the switch proceeds; the losing supplier has until the end of the objection window to withdraw the objection. If the issue is not resolved, then the switch stops. The objection resolution window is currently 1 working day from when the objection is raised.
8. **Withdraw switch** – The gaining supplier may withdraw the switch request, for example if the consumer withdraws under the cooling off period, which cancels the switch. This is only permissible up to 2 working days before the SSD.
9. **Disallow switch cancellation** - 2 working days before the SSD, the switch becomes irrevocable and withdrawal is no longer possible.
10. **Await switch execution** – 2 working days must elapse between the point at which the switch becomes irrevocable and its execution.
11. **Execute switch** –At 00:00 on the SSD, the switch becomes effective so that the gaining supplier becomes the current supplier.
12. **Complete agent appointments in MPAS** – Agent appointment details must be sent into MPAS within 5 working days after the SSD. If no details are sent, then MPAS defaults the agents associated with the losing supplier to the gaining supplier.
13. **Complete settlement parameters in MPAS** – Details of the gaining supplier's settlement parameters must be sent into MPAS within 5 working

days after the SSD. If they are not updated, then MPAS defaults the losing supplier's parameters.

14. **Carry out meter hand-over** – Agents exchange meter details and historical consumption data using data flows over the DTN and may pass some details to the supplier for it to send an update into MPAS.
15. **Obtain meter reading** – The gaining supplier takes a meter read (via its DC or the consumer) and passes it to the losing supplier (via its data collector). If no read is taken, the gaining supplier's DC estimates the read based on historical data. The read must be obtained between five working days before the SSD and not later than five working days following the SSD.

2.4. The switch is illustrated in Figure 1 below.

Represents an activity happening over a period of time.

Represents an event that is completed immediately, such as a change of status.

Represents a dependency between two activities (the activity indicated by the arrow-head is dependent on the activity originating the arrow). A dependency is typically Finish-to-Start (the first activity has to end before the dependent one can start), but can also be Finish-to-Finish (as is the case for 'Appoint agents'/'Complete agent appointments in MPRS' where 'Appoint agents' must complete before 'Complete agent appointments in MPRS' can complete).

Activity	Switching Repository process(es)	Initiator	Actors
SWITCH - ELECTRICITY CURRENT ARRANGEMENTS, TRADITIONAL CREDIT METER			
Agree terms		Consumer	Gaining Supplier
Cool off		Consumer (Domestic)	Gaining Supplier
Request switch		Gaining Supplier	MPRS
Notify of pending loss		MPRS	Losing Supplier, Gaining Supplier
Appoint agent(s)		Gaining Supplier	Gaining Agents
Determine settlement parameters		Gaining Supplier	
Raise objection		Losing Supplier	MPRS
Withdraw switch		Gaining Supplier	MPRS
Disallow switch cancellation		MPRS	
Await switch execution		MPRS	
Execute switch		MPRS	
Complete agent appointments in MPRS		Gaining Supplier	MPRS
Complete settlement parameters in MPRS		Gaining Supplier	MPRS
Carry out meter hand-over		Gaining Agents	Losing Agents
Obtain meter reading		Gaining Supplier, Gaining Agents	Losing Supplier, Losing Agents

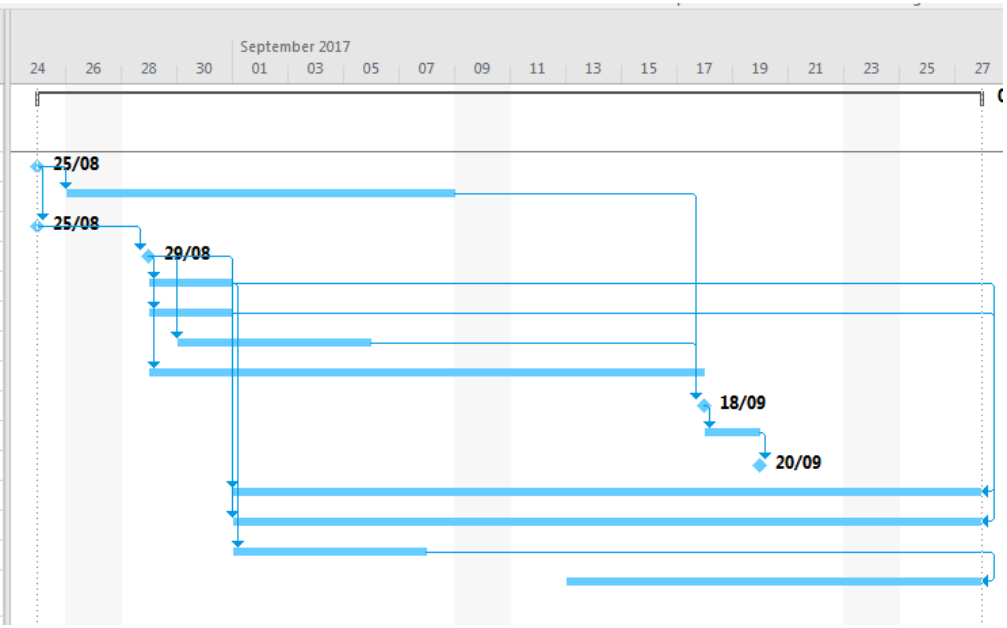


Figure 1 Switch - Electricity Current Arrangements, Traditional Credit Meter

Switching in Gas

Switch Traditional Credit Meter

2.5. The following activities take place:

1. **Agree terms** - The consumer contacts the gaining supplier and together they agree a contract including the SSD. The supplier's proposal to the consumer, particularly for non-domestic consumers, relies on information provided by a number of participants – the shipper (for gas and gas transportation charges), meter reading agent (MRA) and meter asset manager (MAM) and can involve a meter asset provider (MAP). For Large Supply Points (non-domestic consumers with a large portfolio), shippers must also obtain the offer data from the nomination process and quote this in the switch request.
2. **Cool off** – A domestic consumer has 14 calendar days from the day after entering into contract to withdraw from the new arrangement. If the consumer does so, the switch is withdrawn.
3. **Initiate switch** - The gaining supplier informs its chosen shipper of the intended switch.
4. **Request switch with settlement parameters** – The gaining shipper sends a switch request to UK Link. The SSD of the request can be between 14 calendar days and 30 working days ahead. In practice, most suppliers agree an SSD around 17 days ahead. This request is submitted as a batch file (CNF file – "confirmation" file). UK Link processes the files received at intervals during each working day. At 23:01 each working day, UK Link conducts its final run of the day, picking up all remaining files received before that time. Files received subsequently are considered to have been submitted on the following working day. The switch at this point has a status of Requested "RQ". The gaining shipper can now update agent and settlement details in UK Link. Unlike electricity, the Shipper provides the Settlement Parameters as part of the Switch Request (confirmation file).
5. **Notify of pending loss** – UK Link notifies the losing shipper of the pending loss and its effective date; the losing shipper notifies the losing supplier. The gaining shipper is also notified. This is the start of the objection window.
6. **Appoint agent(s)** – The gaining supplier appoints a MAM using RGMA data flows. Execution of the switch is not dependent on completion of agent appointments.
7. **Initiate objection** – The losing supplier has a fixed period of time in which to raise an objection to the switch (the objection window), which the supplier does through the shipper.
8. **Raise objection** – The losing shipper sends an objection to UK Link. The objection window is normally 7 working days, with the first day being that after which the switch request was submitted. The window can be shorter

than this to cater for bank holidays: it is set such that it ends 2 full working days before the SSD. If the losing shipper raises no objection within the window, then that shipper can no longer object to the switch. At this point, there is no change in the status of the switch but it is implicit that if the window has elapsed, then an objection can no longer be raised. If an objection is raised during the objection window, then a resolution process starts immediately. If the issue is resolved, the losing supplier removes the objection and the switch proceeds. The objection can be removed during the original objection raising window. If the issue is not resolved, then the switch stops.

9. **Disallow switch cancellation** - 2 working days before the SSD, the switch becomes irrevocable; its status becomes Confirmed "CO".
10. **Complete agent appointments in UK Link** –If the new supplier agent is different, the gaining supplier sends agent details (MAM ID) to UK Link via the gaining shipper. If no details are sent, then UK Link defaults the agent associated with the losing supplier to the gaining supplier.
11. **Execute switch** – The switch becomes effective at the start of the gas day, at 05:00.
12. **Obtain meter reading** – The gaining supplier takes a meter read (through its agent or a consumer) and passes it to the losing shipper/supplier (via UK Link). This opening read can be taken between 5 days prior to SSD and 5 days after SSD. If no read has been accepted in UK Link by 10 days after SSD, then UK Link estimates the read based on historical data.

2.6. The switch is illustrated in Figure 2 below.

Activity	Switching Repository process(es)	Initiator	Actors
SWITCH - GAS CURRENT ARRANGEMENTS, TRADITIONAL CREDIT METER			
Agree terms		Consumer	Gaining Supplier
Cool off		Consumer (Domestic)	Gaining Supplier
Initiate switch		Gaining Supplier	Gaining Shipper
Request switch with settlement paramete		Gaining Shipper	UK Link
Notify of pending loss		UK Link	Losing Shipper, Gaining Shipper
Appoint agent(s)		Gaining Supplier	Gaining Agents
Initiate objection		Losing Supplier	Losing Shipper
Raise objection		Losing Shipper	UK Link
Disallow switch cancellation		UK Link	
Complete agent appointments in UK Link		Gaining Shipper	UK Link
Execute switch		UK Link	
Obtain meter reading		Gaining Supplier	Losing Supplier

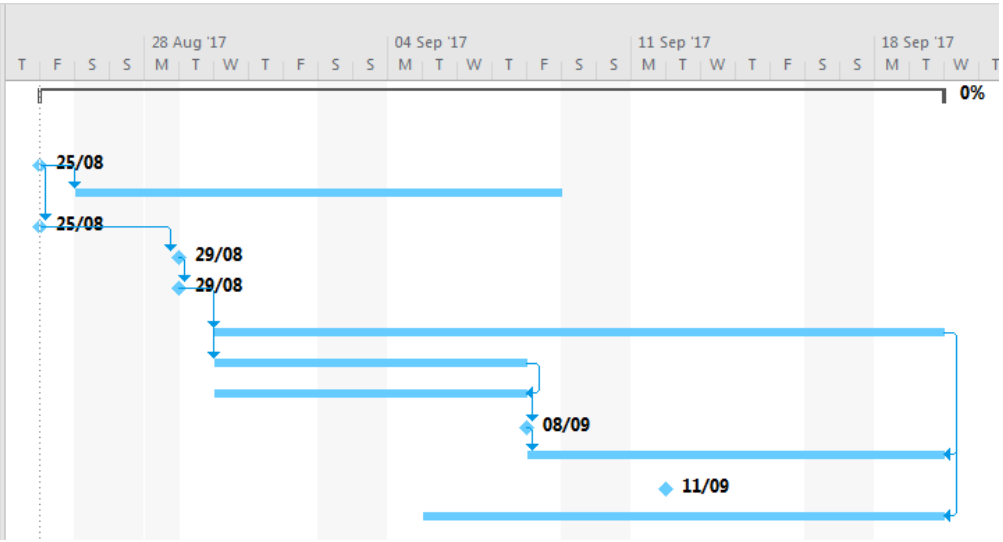


Figure 2 Dependencies for Switch - Gas Current Arrangements, Traditional Credit Meter

3. New Switching Arrangements

Overall Switch Timeline

Principles

3.1. The overall length of a switch will be set by regulation. CSS will be designed and built to be capable of supporting all the timelines described below.

3.2. CSS will harmonise the maximum switch request period between electricity (currently 28 calendar days in the future) and gas (currently 30 calendar days in the future) by setting a maximum switch request period to be 28 calendar days in the future.

Operation during transitional stage

3.3. When CSS goes live, there will be a transitional stage, when suppliers will be expected to complete a switch within five working days (or a shorter period, should the gaining supplier be able to support this). The day on which the switch request is submitted is considered as Working Day 1 and the switch is expected to take effect at midnight on Working Day 5 (00:00 on the calendar day following Working Day 5). The objection window for a domestic switch will be up to 17:00 on Working Day 2 and 17:00 on Working Day 3 for a non-domestic switch. Switches may be requested up to 28 calendar days ahead of the switch date.

3.4. Figure 3 below illustrates the expected timeline for a domestic switch. The switch request is submitted on 31/07/2017 and once it has been accepted by CSS, it is stored with a status of "validated". The objection window closes at 17:00 on 01/08/2017, at which point the status is changed to "confirmed" if no objection has been raised. The switch is "secured" at 17:00 on 04/08/2017, at which point it can no longer be cancelled. The switch is "completed" at 00:00 on 05/08/2017. For full details of the switch statuses, see D-4.1.2 E2E Detailed Design Models[1].

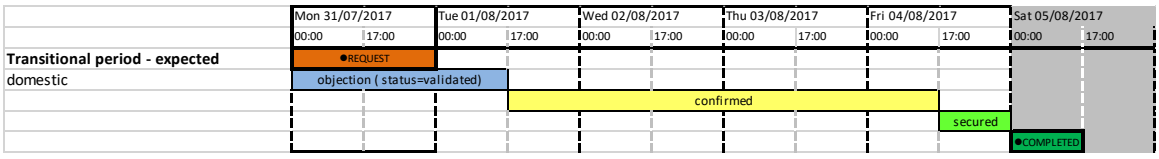


Figure 3 - Five working day domestic switch

3.5. Figure 4 below illustrates the expected timeline for a non-domestic switch.

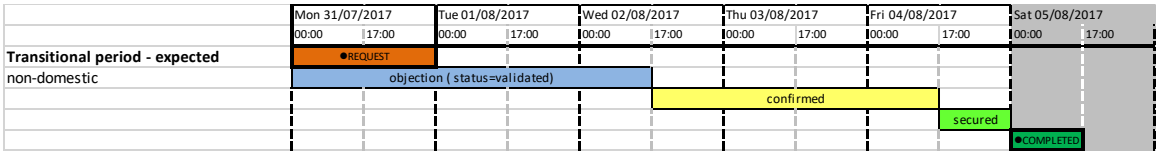


Figure 4 - Five working day non-domestic switch

3.6. Figure 5 below illustrates the expected timeline for a domestic switch across a bank holiday weekend.

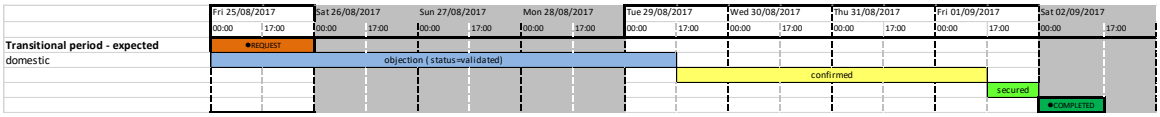


Figure 5 - Five working day domestic switch across a bank-holiday weekend

3.7. Figure 6 below illustrates the expected timeline for a non-domestic switch across a bank-holiday weekend.

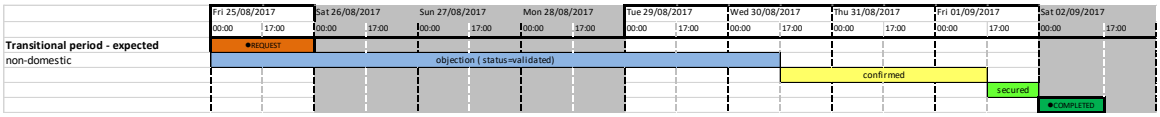


Figure 6 - Five working day non-domestic switch across a bank-holiday weekend

3.8. The next-day switch is the fastest domestic switch: it will be at the end of the working day following submission of the switch request. This is dictated by the length of the objection window: the earliest point at which the switch can take effect is the start of the calendar day after the closing of the objection window. The fastest non-domestic switch will be one working day longer than the domestic switch. It is possible that regulatory obligations will be placed on suppliers wishing to conduct next-day switches immediately following go-live; where suppliers will be expected to offer to switch customers within 5 working days. Suppliers will be able to switch faster than 5 working days, and up to the next working day, during the transitional period if they can do so without harming consumers.

3.9. Suppliers may determine the objection window length by viewing ECOES / DES to identify if the site is domestic or non-domestic. This will enable the supplier to set the minimum switch time expectation with the consumer.

3.10. Figure 7 below illustrates the shortest possible domestic next-day switch.

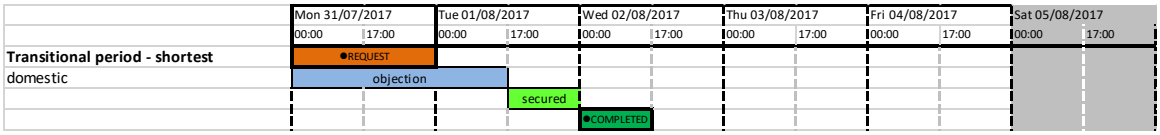


Figure 7 Fastest possible domestic switch

3.11. Figure 8 below illustrates the shortest possible non-domestic switch.

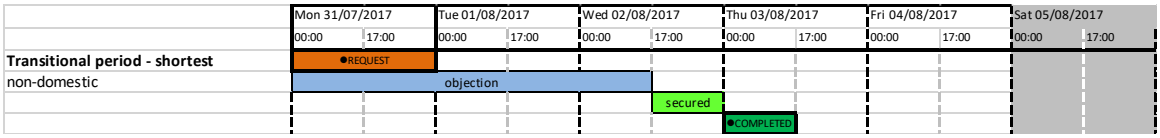


Figure 8 Fastest possible non-domestic switch

Operation post-transitional – next-day switch

3.12. A transitional period will be set out, after which suppliers will be expected to be able to offer next-day switches as a matter of course. Figure 9 and Figure 10 below illustrate the next day switch timeline for domestic and non-domestic respectively.

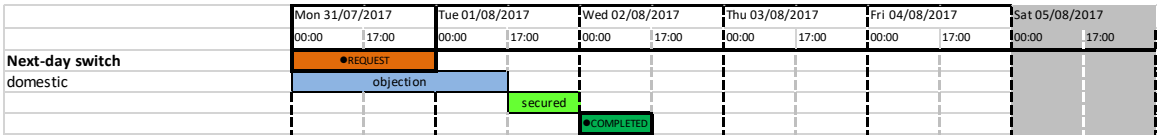


Figure 9 Next-day switch - domestic

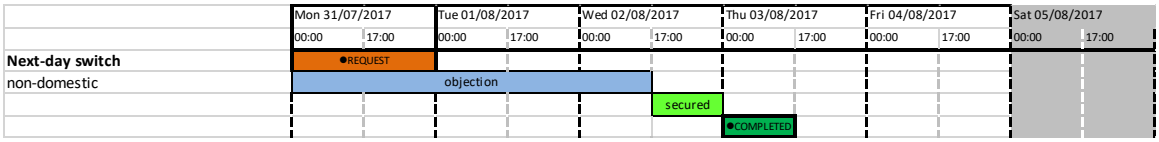


Figure 10 Next-day switch – non-domestic

Possible future operation – same-day switch

3.13. In the longer term, and following a consultation, it is possible that the time to effect a switch may be further reduced for both domestic and non-domestic. In this case, CSS will expect an instant objection response from the losing supplier and the switch will be secured at 17:00 on the day of switch request submission, with the switch being effective at 00:00 on the following calendar day. The CSS system will be designed and built to support this from the outset, but other systems and business processes may not support this initially. Figure 11 below illustrates the same-day switch timeline.

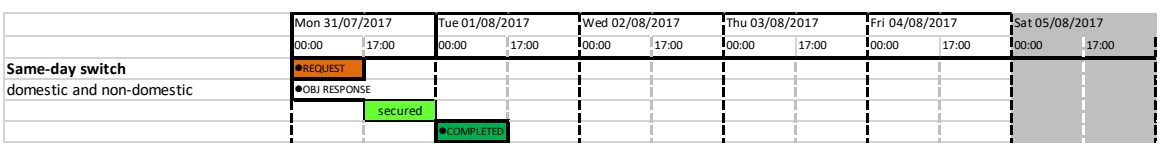


Figure 11 - Same-day switch

Events in Operational Day

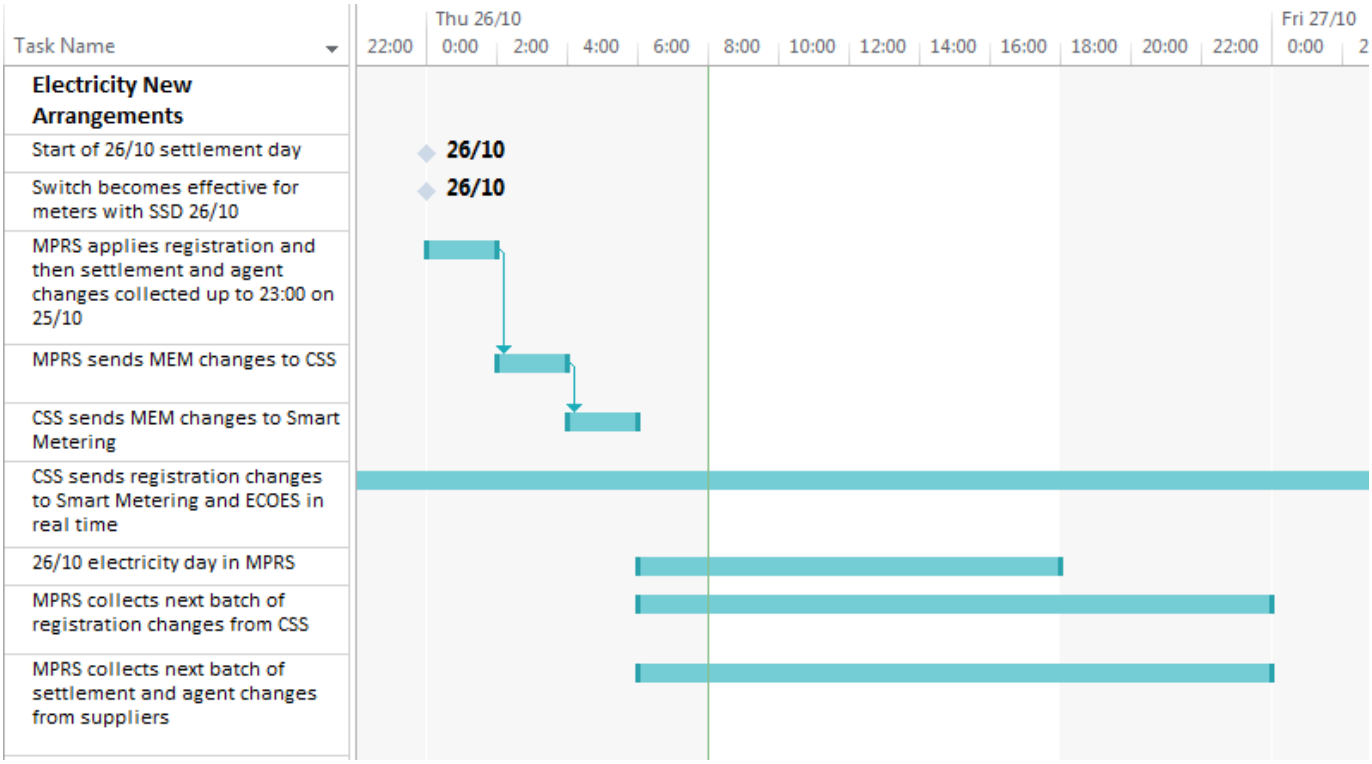
3.14. Interactions between systems within the Switching Arrangements are message-based, but it is possible in some cases that messages may be accumulated over a certain period before being applied, rather than being applied as they arrive. In order to ensure consistency across the systems and understand the timeliness of updates, the daily schedule for the new arrangements is described below.

Electricity Operational Day

3.15. CSS updates arrive individually at MPAS in a message-based manner and may be buffered by MPAS for later application. The settlement day for electricity starts at 00:00, at the same time as any switches for that day become effective. At around this time, MPAS applies the updates collected up to 23:00 on the previous day. These are both updates from CSS and updates containing settlement and agent changes from suppliers (which may be for immediate application or be "pending" (see Switching Design Repository[1] for further details) to become effective at a future date).

3.16. Switching information from CSS updates must be applied first, because there may be pending switches for which the gaining supplier has sent in agent or settlement details that day; MPAS must register the pending switch before the gaining supplier is allowed to update agent/settlement details. The application of CSS updates in MPAS includes access control revocation for the gaining supplier where switch requests that have been withdrawn, annulled, objected, or rejected.

3.17. Following this, MPAS sends any Metering Equipment Manager (MEM) changes to CSS and CSS sends these to the Smart Metering system, to enable the new MEM to access the smart meters. CSS registration changes are sent to Smart Metering and ECOES at any time during the day, as soon as CSS has processed them. MPAS collects updates for settlement and agent changes from its start-up at 06:00 until 23:00.

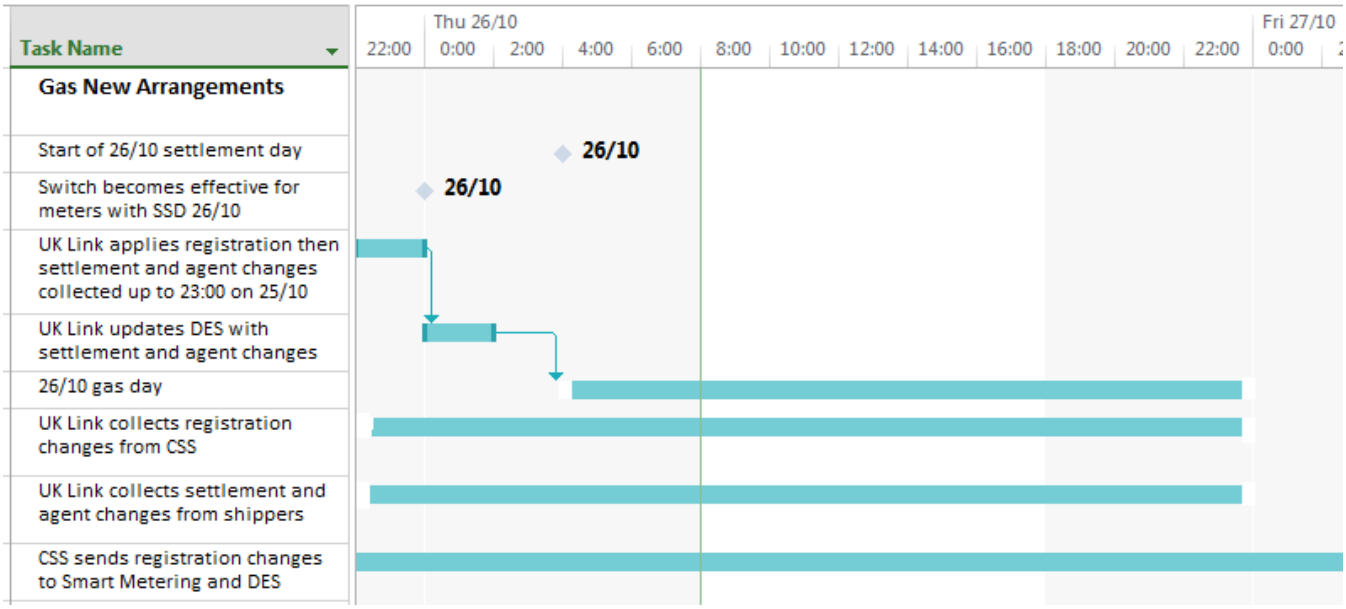


Gas Operational Day

3.18. CSS updates arrive individually at UK Link in a message-based manner and may be buffered by UK Link for later application. Switches for a given day become effective at 00:00 and the settlement day for gas starts at 05:00. Prior to 05:00, UK Link applies the updates it has received up to 23:00 on the previous day. These are both updates from CSS and updates containing settlement and agent changes from shippers.

3.19. Switching information from CSS must be applied first, because there may be pending switches for which the gaining supplier has sent in agent or settlement details that day; UK Link must register the pending switch before the gaining shipper is allowed to update agent/settlement details. The application of CSS updates in UK Link includes access control revocation for the gaining supplier where switch requests have been withdrawn, annulled, objected, or rejected.

3.20. CSS registration changes are sent to Smart Metering and DES in a message-based manner at any time during the day, as soon as CSS has processed them. UK Link collects updates of settlement and agent changes from its start-of-day at 05:00 until 23:00.



Approach and Assumptions

3.21. The approach used made assumptions about the timing of interactions between different parts of the end-to-end system, and then tested the resulting business integrity of the new switching arrangements, to decide whether the assumptions stood or needed revising. Dependencies between different activities have been defined and are shown in the Gantt charts. These "dependencies" are not necessarily enforceable or detectable by any system, but for smooth switching operation, a process in one system may need to happen before a process in another system.

3.22. An example of the application of this approach is the frequency of update of MPAS and UK Link with registration-related changes sent by CSS. Gaining shippers and gaining suppliers rely on the completion of these updates to start entering settlement and agent details, relating to the switch, into UK Link and MPAS. The assumption was made that the UK Link and MPAS systems would **not** need to apply the changes in real-time, but that these changes could be accumulated and applied later (either overnight or at intervals during the day). This is similar to current practice (except that the updates are accumulated by the sender rather than the receiver). The assumption was tested by determining whether settlement parameters need to be updated before the switch takes place: if the switch is dependent on updated settlement parameters, then there may be inadequate time to enter the new settlement details. In electricity, the E2E design does **not** require settlement details to be updated before effecting the switch, so this assumption was upheld. In gas, shippers do need the opportunity to update settlement parameters before the switch takes place. This can be ensured by requiring UK Link to apply CSS-submitted updates before shipper-submitted updates in any processing run.

3.23. The assumptions made were that:

- UK Link and MPAS continue to apply updates once per working day, during the night.

E2E Functions not Addressed in this Document

Energy Trading and Settlement

3.24. For electricity settlement, following a switch, updates can be made retrospectively to change or rectify settlement-related items. Electricity settlement is not impacted by the new switching arrangements. Energy trading will have to take account of any switch, but electricity can be traded up to one hour ahead and the notice of a gain or a loss under the new arrangements will be at least 7 hours. As a result neither energy trading, network balancing, or settlement related activities need place any constraints on the new switching arrangements for electricity.

3.25. For gas settlement and network balancing, the requirement is to have a clear picture of the day's usage pattern by the end of the previous day, which will continue to be the case for the new switching arrangements. The overnight update run of UK Link carries out all the relevant updates for the coming day in the early hours of the morning, therefore neither network balancing, or settlement related activities need place any technical constraints on the new switching arrangements for gas. It is acknowledged that the length of time between the switch being "secured" and the SSD is substantially less in the new arrangements, meaning less time to organise and apply changes. However, this is not regarded as important because balancing will not be needed for domestic switches, and for any large non-domestic switch there will be a good deal of advance notice in which to ensure nominations are correct.

One-Fail-All-Fail Processing

3.26. No business scenario has been described in this document for one-fail-all-fail processing because the life-cycle and dependencies are the same as for an individual switch.

Debt Resolution

3.27. The design of CSS assumes that once an objection to a switch has been raised, that switch is then cancelled. Should the debt issue be resolved and the consumer still wishes to switch, then a new switch request must be entered.

Related RMPs

3.28. No business scenario has been defined for related RMPs (MPANs that must switch together). The life-cycle and dependencies are the same as for an individual switch.

Other Issues

SMETS1 Meters

3.29. As far as switching is concerned, SMETS1 meters which are DCC-enrolled can be considered as equivalent to SMETS2 meters. DCC User Interface Specification

(DUIS) Service Requests are used to communicate with both types of smart meter and the Change of Supplier process is the same on both. A new DCC User Role introduced to manage SMETS1 meters (S1SP) is not relevant to switching because the DCC User is set up when the meter is created, and the relationship between User and meter does not change.

3.30. Currently the S1SP Users obtain an update to the Smart Metering Inventory of meters each day via the SSI. They can also enquire on particular RMPs using an API. An issue to be resolved is whether this refresh will need to be more frequent under the new switching arrangements.

Switching in Electricity

Introduction

3.31. There are four basic business scenarios for a switch of supplier in electricity as follows:

- Traditional credit meter;
- Traditional prepayment meter;
- DCC-enrolled credit meter; and
- DCC-enrolled prepayment meter.

3.32. Each of the four follow similar business processes. The traditional credit meter switch is described in further detail below and serves as a model for the other three.

Summary of Switch Business scenarios

3.33. The activities relevant to each scenario are summarised in Table 1 below. The list is consistent with the business processes in the Switching Design Repository[1]. The activities have been chosen as those involving major interactions between the systems and deliberately do not include all processes in the detail of the Switching Design Repository[1]. The mapping to processes is also provided in Gantt charts - Figure 12 and Figure 13 below - describing the dependencies between activities.

Activity Ref	Activity	Electricity				
		traditional meter		DCC-enrolled meter		NOTES
		credit	prepayment	credit	prepayment	
1	**Agree terms**	✓	✓	✓	✓	The same for all scenarios.
2	**Cool off (domestic consumers)**	✓	✓	✓	✓	The same for all scenarios.
3	**Request switch**	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Electricity				
		traditional meter		DCC-enrolled meter		NOTES
		credit	prepayment	credit	prepayment	
4	**Notify of pending loss (and invite to object)**	✓	✓	✓	✓	The same for all scenarios.
5	**Appoint agent(s)**	✓	✓	✓	✓	The same for all scenarios.
6	**Determine settlement parameters**	✓	✓	✓	✓	The same for all scenarios.
7	**Raise objection**	✓	✓	✓	✓	The same for all scenarios.
8	**Withdraw switch**	✓	✓	✓	✓	The same for all scenarios.
9	**Enable agent/ settlement updates in MPAS**	✓	✓	✓	✓	The same for all scenarios.
10	**Annul switch**	✓	✓	✓	✓	The same for all scenarios.
11	**Send top up device to consumer**	×	✓	×	×	This activity is only relevant to traditional prepayment meters. Because it takes 3 working days and commences following the end of the objection window, it is a limiting factor in the speed of these switches.
12	**Confirm switch**	✓	✓	✓	✓	The same for all scenarios.
13	**Notify of confirmed switch**	✓	✓	✓	✓	For DCC-enrolled meters, an additional notification is sent to Smart Metering.
14	**Await securing of switch**	✓	✓	✓	✓	The same for all scenarios.
15	**Secure switch**	✓	✓	✓	✓	The same for all scenarios.
16	**Notify of secured switch**	✓	✓	✓	✓	For DCC-enrolled meters, an additional notification is sent to Smart Metering.
17	**Prepare for meter hand-over**	×	×	✓	✓	This activity is only relevant to DCC-enrolled meters; the gaining supplier prepares commands to take over the meter.
18	**Issue commands for meter hand-over**	×	×	✓	✓	This activity is only relevant to DCC-enrolled credit and prepayment meters; the losing supplier removes pricing information places the meter in credit mode (if the meter was previously in prepayment mode), ready for the hand-over.
19	**Await switch completion**	✓	✓	✓	✓	The same for all scenarios.
20	**Complete switch**	✓	✓	✓	✓	The same for all scenarios.
21	**Complete agent appointments in MPAS**	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Electricity				
		traditional meter		DCC-enrolled meter		NOTES
		credit	prepayment	credit	prepayment	
22	**Complete settlement parameters in MPAS**	✓	✓	✓	✓	The same for all scenarios.
23	**Notify agent appointments to CSS**	✓	✓	✓	✓	The same for all scenarios.
24	**Carry out meter hand-over**	✓	✓	✓	✓	For a DCC-enrolled meter, this consists of the gaining supplier placing its credentials on the meter. For a traditional meter, the agents exchange meter technical details and may update MPAS.
25	**Obtain meter reading**	✓	✓	✓	✓	This activity differs between traditional and DCC-enrolled meters.

Table 1 Electricity Switch Summary of Business scenarios

Switch Dependencies and Parties Involved

3.34. Table 2 below identifies the parties involved in each activity under the following headings:

- Initiator; and
- Parties Involved.

3.35. For example, the Initiator of **Agree Terms** is the Consumer and the Party Involved is the gaining supplier (for example, initiated by the consumer's phone call to the gaining supplier). In some scenarios there is no interaction between different parties; this is shown as a single Initiator.

3.36. Dependencies between activities are also shown. Activity number 3 (**Request switch)** for example is dependent on activity 1 (**Agree terms**), meaning that **Request switch** cannot start until **Agree terms** has finished. Where there is a Finish-to-Finish dependency, this is shown as FF. For example, activity 21 (**Complete agent appointments in MPAS**) has a Finish-to-Finish dependency on activity 5 (**Appoint agent(s)**): **Complete agent appointments in MPAS** can only finish once **Appoint agent(s)** has finished.

3.37. The dependencies represent what must happen for a switch to take place. Some can be verified by CSS, but others cannot, for example CSS is able to check that a switch is confirmed before it becomes secured, but cannot check that the gaining supplier has made preparations for meter handover before the switch completes. Items that CSS cannot check have been allowed sufficient time to reasonably expect them to complete in line with the dependencies.

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
1	**Agree terms**		Consumer	Gaining Supplier
2	**Cool off**	1	Domestic Consumer	Gaining Supplier
3	**Request switch**	1	Gaining Supplier	CSS
4	**Notify of pending loss (and invite to object)**	3	CSS	Losing Supplier, Gaining Supplier, MPAS, ECOES, Smart Metering
5	**Appoint agent(s)**	1	Gaining Supplier	Gaining Agent(s)
6	**Determine settlement parameters**	1	Gaining Supplier	
7	**Raise objection**	4	Losing Supplier	CSS
8	**Withdraw switch**	4	Gaining Supplier	CSS
9	**Annul switch**	4	Losing Supplier	CSS
10	**Confirm switch**	4	CSS	
11	**Notify of confirmed switch**	10	CSS	Losing Supplier, Losing Agent(s), Gaining Supplier, MPAS, ECOES, Smart Metering
12	**Enable agent/ settlement updates in MPAS**	4	MPAS	Gaining Supplier
13	**Send top up device to consumer (if prepayment meter)**	4	Gaining Supplier	Consumer
14	**Await securing of switch**	10	CSS	
15	**Secure switch**	14	CSS	
16	**Notify of secured switch**	15	CSS	Losing Supplier, Losing Agent(s), Gaining Supplier, MPAS, ECOES, Smart Metering
17	**Prepare change of supplier commands for meter hand-over (DCC-enrolled)**	4	Gaining Supplier	Smart Metering
18	**Issue prepayment to credit commands for meter hand-over (DCC-enrolled)**	16	Losing Supplier	Smart Metering
19	**Await switch completion**	15	CSS	
20	**Complete switch**	18, 19	CSS	
21	**Complete agent appointments in MPAS**	5FF, 12	Gaining Supplier	MPAS
22	**Complete settlement parameters in MPAS**	6FF,12	Gaining Supplier	MPAS

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
23	**Notify agent appointments to CSS**	21	MPAS	CSS
24	**Carry out meter hand-over**	5FF,16 (Traditional) 20 (DCC enrolled)	Gaining Agents(s) or Gaining Supplier	Losing Agents(s), MPAS or Smart Metering
25	**Obtain meter reading**	24FF	Gaining Agents(s) or Gaining Supplier	Losing Agents(s) or Losing Supplier Or Smart Metering

Table 2 Electricity Switch dependencies

3.38. A timely interaction between the different parties is important for:

- MPAS enabling agent/settlement detail updates; and
- CSS notifying Smart Metering of secured switch.

3.39. Activities 11 and 12 involve CSS notifying MPAS of a pending switch and MPAS enabling the gaining supplier to start entering agent and other details against the metering point in MPAS. Agent and settlement details do not have to be completed before the switch happens, but with a shorter switch time, a more timely interface mechanism to MPAS should be considered (which would mean a change to MPAS).

3.40. Activities 16, 17, 18 and 24 involve the preparation for and hand-over of a DCC-enrolled meter. Timing is important here because once the switch is secured at 17:00, the losing supplier has until 23:59 to set the meter into credit mode (if it is a prepayment meter). If the gaining supplier has not already sent commands to Smart Metering to take control of the meter at the appropriate time, then it has the same period to send in those commands. If the gaining supplier has already sent in future-dated commands which have been stored in Smart Metering, it has the same window in which to send these commands to the meters for them to be actioned at 00:00.

Switch Traditional Credit Meter

3.41. The following activities take place:

1. **Agree terms** - The consumer contacts the gaining supplier and together they agree a contract including a supply start date (SSD) for the switch to take effect. The SSD is initially expected to be around 5 working days in the future, moving to next working day for domestic consumers and 2

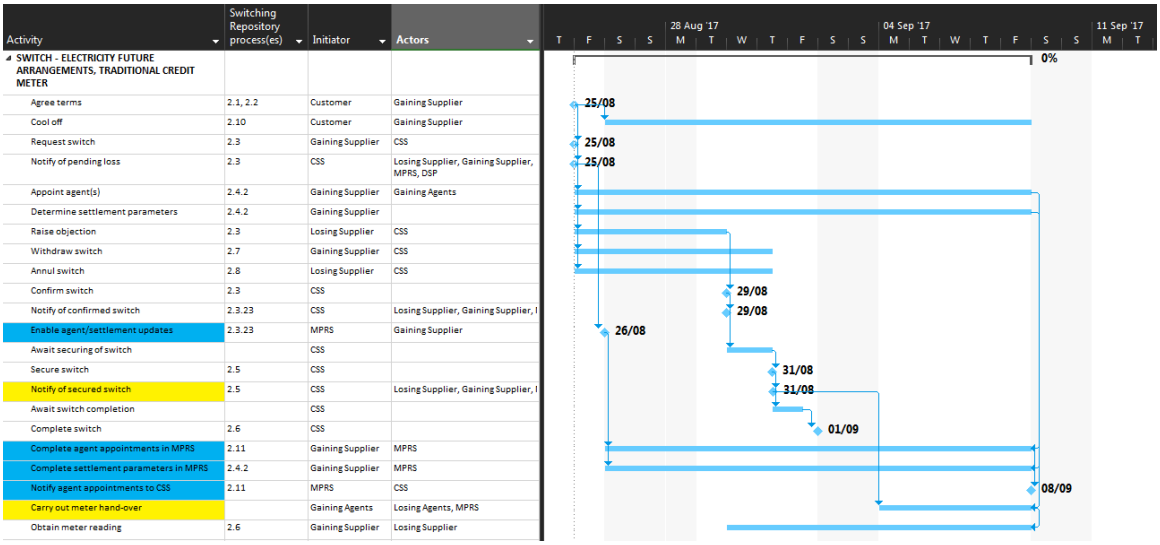
working days for non-domestic consumers. The gaining supplier may use ECOES (via its API) to determine incumbent agents, metering address and technical details.

2. **Cool off** – A domestic consumer has 14 calendar days from the point at which terms are agreed to withdraw from the new arrangement; this time starts from the next calendar day. If the consumer does so before the switch becomes "secured", then the gaining supplier withdraws the switch and the switch stops. If the consumer does so after the switch has either become "secured" or has completed, then the consumer is given the option of returning to their old supplier on equivalent terms; going to a new supplier (both of which require a new switch to be raised); or staying with the new supplier on a deemed contract.
3. **Request switch** – The gaining supplier sends a switch request to CSS, which is validated and stored in CSS with a status of "validated". The SSD of the request can be the calendar day following the next working day (for domestic consumers or following two working days for non-domestic consumers), or up to 28 calendar days ahead.
4. **Notify of pending loss** – CSS notifies the losing supplier and gaining supplier of the pending loss and its effective date. CSS also notifies MPAS and ECOES.
5. **Appoint agent(s)** – The gaining supplier appoints a MEM, DC, and DA using data flows over the DTN. Execution of the switch is not dependent on completion of agent appointments. MPAS
6. **Determine settlement parameters** – The gaining supplier determines the settlement parameters. Execution of the switch is not dependent on determining the settlement parameters. An example of a settlement parameter for electricity is Measurement Class (half-hourly/non-half-hourly).
7. **Raise objection** – The losing supplier has a fixed "objection window" in which to raise an objection to the switch (up to 17:00 on the working day following the switch request submission for domestic switches and up to 17:00 on the second working day for non-domestic switches). An objection is typically either because of contractual issues for non-domestic consumers or debt issues for domestic consumers. If an objection is raised within the window, then the switch stops and is cancelled.
8. **Withdraw switch** – The gaining supplier may withdraw the switch request, which cancels the switch. This may be done at any point after the switch is validated and before the switch is secured.
9. **Annul switch** – The losing supplier may annul the switch request (for example if the consumer has notified that the switch is erroneous), which cancels the switch. This may be done at any point after the switch is confirmed and before the switch is secured.
10. **Confirm switch** - If either the objection window has elapsed without an objection or a "no objection" response has been received, then the switch request status becomes "confirmed". From this point, no objections are allowed.

11. **Notify of confirmed switch** - CSS notifies the losing supplier, losing agents and gaining supplier of the confirmed switch. CSS also notifies MPAS, and ECOES.
12. **Enable agent/settlement updates in MPAS** - MPAS enables the gaining supplier to enter agent and other details against this supply point as a result of the notification from CSS of a pending change of supplier. This happens as part of the overnight update run where MPAS applies the changes sent by CSS during that working day.
13. **Await securing of switch** – For a switch taking 5 working days to complete, there is a period of a few days following confirmation. During this period, the switch is in a state of "confirmed" during which point the switch may be annulled or withdrawn.
14. **Secure switch** – At 17:00 on the calendar day immediately preceding the SSD, the switch becomes "secured" and withdrawal/annulment is no longer possible.
15. **Notify of secured switch** – CSS notifies the losing supplier, losing agents and gaining supplier of the secured switch. CSS also notifies MPAS, and ECOES.
16. **Await switch completion** – The period between Secure switch and Complete switch (17:00 to 23:59 on the calendar day preceding the SSD).
17. **Complete switch** – At 00:00 on the SSD, the switch is completed and the incumbent supplier is changed in CSS.
18. **Complete agent appointments in MPAS** – The gaining supplier updates agent appointment details into MPAS after switch confirmation which can be post-SSD. If no details are sent, then MPAS defaults the agents associated with the losing supplier to the gaining supplier.
19. **Complete settlement parameters in MPAS** – The gaining supplier sends details of the new settlement parameters into MPAS after switch confirmation which can be done after SSD. If they are not updated, then MPAS defaults to the old parameters.
20. **Notify agent appointments to CSS** – MPAS notifies CSS of the new agent details.
21. **Carry out meter hand-over** – The gaining supplier notifies their appointed agents of the losing supplier agents. The agents exchange meter technical details and historical consumption data using data flows over the DTN, and consequently the gaining supplier may subsequently update some details in MPAS.
22. **Obtain meter reading** – The gaining supplier obtains a meter read via its DC or from the consumer, and passes it to the losing supplier (via its DC). If no read is obtained, the gaining supplier's DC estimates the read based on historical consumption data. The read via the gaining supplier's DC can be obtained after confirmation (up to 5 working days before SSD) and must be at the latest on the fifth working day following the SSD.

3.42. The switch is illustrated in Figure 12 below:

Note: *Items in shaded backgrounds are time critical activities. They are grouped by the same colour*



Activity	Switching Repository process(es)	Initiator	Actors
SWITCH - ELECTRICITY FUTURE ARRANGEMENTS, TRADITIONAL CREDIT METER			
Agree terms	2.1, 2.2	Customer	Gaining Supplier
Cool off	2.10	Customer	Gaining Supplier
Request switch	2.3	Gaining Supplier	CSS
Notify of pending loss	2.3	CSS	Losing Supplier, Gaining Supplier, MPRS, DSP
Appoint agent(s)	2.4.2	Gaining Supplier	Gaining Agents
Determine settlement parameters	2.4.2	Gaining Supplier	
Raise objection	2.3	Losing Supplier	CSS
Withdraw switch	2.7	Gaining Supplier	CSS
Annul switch	2.8	Losing Supplier	CSS
Confirm switch	2.3	CSS	
Notify of confirmed switch	2.3.23	CSS	Losing Supplier, Gaining Supplier, I
Enable agent/settlement updates	2.3.23	MPRS	Gaining Supplier
Await securing of switch		CSS	
Secure switch	2.5	CSS	
Notify of secured switch	2.5	CSS	Losing Supplier, Gaining Supplier, I
Await switch completion		CSS	
Complete switch	2.6	CSS	
Complete agent appointments in MPRS	2.11	Gaining Supplier	MPRS
Complete settlement parameters in MPRS	2.4.2	Gaining Supplier	MPRS
Notify agent appointments to CSS	2.11	MPRS	CSS
Carry out meter hand-over		Gaining Agents	Losing Agents, MPRS
Obtain meter reading	2.6	Gaining Supplier	Losing Supplier

Figure 12 Switch - Electricity Future Arrangements, Traditional Credit Meter

Switch Traditional Prepayment Meter

3.43. The switch of a traditional prepayment meter follows the same process as that for a traditional credit meter, with one additional activity. **Send top up device to consumer** is dependent on the completion of activity **Notify of confirmed switch**; it must be completed before Secure switch.

1. **Send top up device to consumer** – The gaining supplier sends the consumer a new payment device through the post (for example a card). This typically takes 3 working days to arrive.

Switch DCC-Enrolled Credit Meter

3.44. The switch of a DCC-enrolled credit meter generally follows the same process as that for a traditional credit meter, with a few differences as noted below, and one additional activity **Prepare for meter hand-over**:

1. **Notify of validated switch** – In addition, CSS notifies Smart Metering of the validated switch
2. **Notify of confirmed switch** - In addition, CSS notifies Smart Metering of the confirmed switch.
3. **Notify of secured switch** –In addition, CSS notifies Smart Metering of the secured switch.
4. **Prepare for meter hand-over** – Service Requests (SRs) are prepared and either scheduled within the gaining supplier's system or sent future-dated to Smart Metering. The first is Update Security Credentials (SR6.23), followed by a meter reading and other commands such as re-configuration of the meter for the new tariffs.
5. **Carry out meter hand-over** –The SR placing the gaining supplier's security credentials on the meter is executed.
6. **Obtain meter reading** – The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). Smart Metering allows both suppliers access to this log. If no read is taken, the gaining supplier's DC estimates the read based on historical data.

Switch DCC-Enrolled Prepayment Meter

3.45. The switch of a DCC-enrolled prepayment meter generally follows the same process as that for a traditional credit meter, with a few differences as described below, plus additional activities **Prepare for meter hand-over** and **Issue commands for meter hand-over**. Note that there is no need to send physical credentials through the post, as there is for a traditional prepayment meter.

1. **Notify of validated switch** – In addition, CSS notifies Smart Metering of the validated switch
2. **Notify of confirmed switch** - In addition, CSS notifies Smart Metering of the confirmed switch.
3. **Notify of secured switch** –In addition, CSS notifies Smart Metering of the secured switch.
4. **Prepare for meter hand-over** – Service Requests (SRs) are prepared and either scheduled within the gaining supplier's system or sent future-dated to Smart Metering. The first is Update Security Credentials (SR6.23), followed by a meter reading plus other commands such as re-configuration of the meter for the new tariffs and placing the meter in prepayment mode.
5. **Issue commands for meter hand-over** – The prepayment meter is changed to credit mode and any processing related to balances by the losing supplier.
6. **Carry out meter hand-over** –The SR placing the gaining supplier's security credentials on the meter is executed.
7. **Obtain meter reading** – The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). Smart Metering allows both suppliers access to this log. If no read is taken, the gaining supplier's DC estimates the read based on the historical data.

Switching in Gas

Introduction

3.46. There are four basic business scenarios for a switch of supplier in gas (as in electricity) as follows:

- Traditional credit meter;
- Traditional prepayment meter;
- DCC-enrolled credit meter; and
- DCC-enrolled prepayment meter.

3.47. Each of the four follow similar business processes. The traditional credit meter switch is described in further detail below and serves as a model for the others.

Summary of Switch Business scenarios

3.48. The activities relevant to each scenario are summarised in Table 3 below.

Activity Ref	Activity	Gas				
		traditional meter		DCC-enrolled meter		NOTES
		credit	prepayment	credit	prepayment	
1	**Agree terms**	✓	✓	✓	✓	The same for all scenarios.
2	**Cool off (domestic consumers)**	✓	✓	✓	✓	The same for all scenarios.
3	**Request switch**	✓	✓	✓	✓	The same for all scenarios.
4	**Notify of pending loss and invite to object**	✓	✓	✓	✓	The same for all scenarios.
5	**Appoint agent(s)**	✓	✓	✓	✓	The same for all scenarios.
6	**Determine Settlement Parameters**	✓	✓	✓	✓	The same for all scenarios.
7	**Raise objection**	✓	✓	✓	✓	The same for all scenarios.
8	**Withdraw switch**	✓	✓	✓	✓	The same for all scenarios.
9	**Annul switch**	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Gas				NOTES
		traditional meter		DCC-enrolled meter		
		credit	prepayment	credit	prepayment	
10	**Confirm switch**	✓	✓	✓	✓	The same for all scenarios.
11	**Notify of confirmed switch**	✓	✓	✓	✓	The same for all scenarios.
12	**Enable agent/ settlement updates in UK Link**	✓	✓	✓	✓	The same for all scenarios.
13	**Complete agent appointments in UK Link**	✓	✓	✓	✓	The same for all scenarios.
14	**Complete settlement parameters in UK Link**	✓	✓	✓	✓	The same for all scenarios.
15	**Send top up device to consumer**	×	✓	×	×	This activity is only relevant to traditional prepayment meters. Because it takes 3 working days and commences following the end of the objection window, it is a limiting factor in the speed of these switches.
16	**Await securing of switch**	✓	✓	✓	✓	The same for all scenarios.
17	**Secure switch**	✓	✓	✓	✓	The same for all scenarios.
18	**Notify of secured switch**	✓	✓	✓	✓	For DCC-enrolled meters, an additional notification is sent to Smart Metering.
19	**Prepare for meter hand-over**	×	×	✓	✓	This activity is only relevant to DCC-enrolled meters; the gaining supplier prepares commands to take over the meter.
20	**Issue commands for meter hand-over**	×	×	×	✓	This activity is only relevant to DCC-enrolled prepayment meters; the losing supplier places the meter in credit mode,

Activity Ref	Activity	Gas				
		traditional meter		DCC-enrolled meter		NOTES
		credit	prepayment	credit	prepayment	
						ready for the hand-over.
21	**Await switch completion**	✓	✓	✓	✓	The same for all scenarios.
22	**Complete switch**	✓	✓	✓	✓	The same for all scenarios.
23	**Notify agent appointments to CSS**	✓	✓	✓	✓	The same for all scenarios.
24	**Carry out meter hand-over**	×	×	✓	✓	This activity is only relevant to DCC-enrolled meters, where the gaining supplier's credentials are placed on the meter.
25	**Obtain meter reading**	✓	✓	✓	✓	This activity differs between traditional and DCC-enrolled meters.

Table 3 Gas Switch Summary of Business scenarios

Switch Dependencies and Parties Involved

3.49. Table 4 below describes the parties involved in each activity.

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
1	**Agree terms**		Consumer	Gaining Supplier
2	**Cool off**	1	Domestic Consumer	Gaining Supplier
3	**Request switch**	1	Gaining Supplier	CSS
4	**Notify of pending loss and invite to object**	3	CSS	Losing Supplier, Losing Shipper, Gaining Supplier, Gaining Shipper, UK Link, DES, Smart Metering
5	**Appoint agent(s)**	1	Gaining Supplier	Gaining Agent(s)
6	**Determine settlement parameters**	1	Gaining Shipper	Gaining Agent(s)

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
7	**Raise objection**	4	Losing Supplier	CSS
8	**Withdraw switch**	4	Gaining Supplier	CSS
9	**Annul switch**	4	Losing Supplier	CSS
10	**Confirm switch**	4	CSS	
11	**Notify of confirmed switch**	10	CSS	Losing Supplier, Losing Agent(s), Losing Shipper, Gaining Supplier, UK Link, DES, Smart Metering
12	**Enable agent / settlement updates in UK Link**	4	UK Link	Gaining Shipper
13	**Send top up device to consumer (if prepayment)**	4	Gaining Supplier	Consumer
14	**Await securing of switch**	10	CSS	
15	**Secure switch**	14	CSS	
16	**Notify of secured switch**	15	CSS	Losing Supplier, Losing Agent(s), Losing Shipper, MAP, Gaining Supplier, Gaining Shipper, UK Link, DES, Smart Metering
17	**Prepare change of supplier commands for meter hand-over (DCC-enrolled)**	4	Gaining Supplier	Smart Metering
18	**Issue prepayment to credit commands for meter hand-over (DCC-enrolled)**	16	Losing Supplier	Smart Metering
19	**Await switch completion**	15	CSS	
20	**Complete switch**	18, 19	CSS	
21	**Complete agent appointments in UK Link**	5FF,12	Gaining Supplier	Gaining Shipper, UK Link
22	**Complete settlement parameters in UK Link**	6FF,12	Gaining Shipper	UK Link
23	**Notify agent appointments to CSS**	21	UK Link	CSS

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
24	**Carry out meter hand-over**	5FF,16 (Traditional) 20 (DCC enrolled)	Gaining Agents(s) or Gaining Supplier	Losing Agents(s), UK Link or Smart Metering
25	**Obtain meter reading**	24FF	Gaining Agents(s) or Gaining Supplier	Losing Agents(s) or Losing Supplier or Smart Metering

Table 4 Gas Switch dependencies

3.50. As in electricity, a timely interaction between the different parties is important for:

- UK Link enabling agent/settlement detail updates; and
- CSS notifying Smart Metering of secured switch.

3.51. Activities 11 and 12 involve CSS notifying UK Link of a pending switch and UK Link enabling the gaining supplier to start entering agent and other details against the metering point in UK Link. Agent and settlement details do not have be completed before the switch happens, but with a shorter switch time, it will be helpful if the gaining supplier can start updating UK Link as soon as possible.

3.52. Activities 16, 17, 18 and 24 involve the preparation for and hand-over of a DCC-enrolled meter. Timing is important here because once the switch is secured at 17:00, the losing supplier has until 23:59 to set the meter into credit mode (if it is a prepayment meter). If the gaining supplier has not already sent commands to Smart Metering to take control of the meter at the appropriate time, then it has the same period to send in those commands. If the gaining supplier has already sent in future-dated commands which have been stored in Smart Metering, it has the same window in which to send these commands to the meters for them to be actioned at 00:00 (with the exception that gas meters may take up to 30 minutes to process commands as they enter a sleep-state to conserve battery life).

Switch Traditional Credit Meter

3.53. The following activities are carried out:

1. **Agree terms** - The consumer contacts the gaining supplier and together they agree a contract including a date for the switch to take effect (SSD). The SSD can be the calendar day following the next working day or up to 28 calendar days ahead. The supplier's proposal to the consumer relies on information provided by a number of participants – the shipper (for gas

and gas transportation charges), meter reading agent (MRA) and meter equipment manager (MEM), and may also involve a meter asset provider (MAP). The gaining supplier may use DES (via its API) to determine incumbent agents, metering address and technical details.

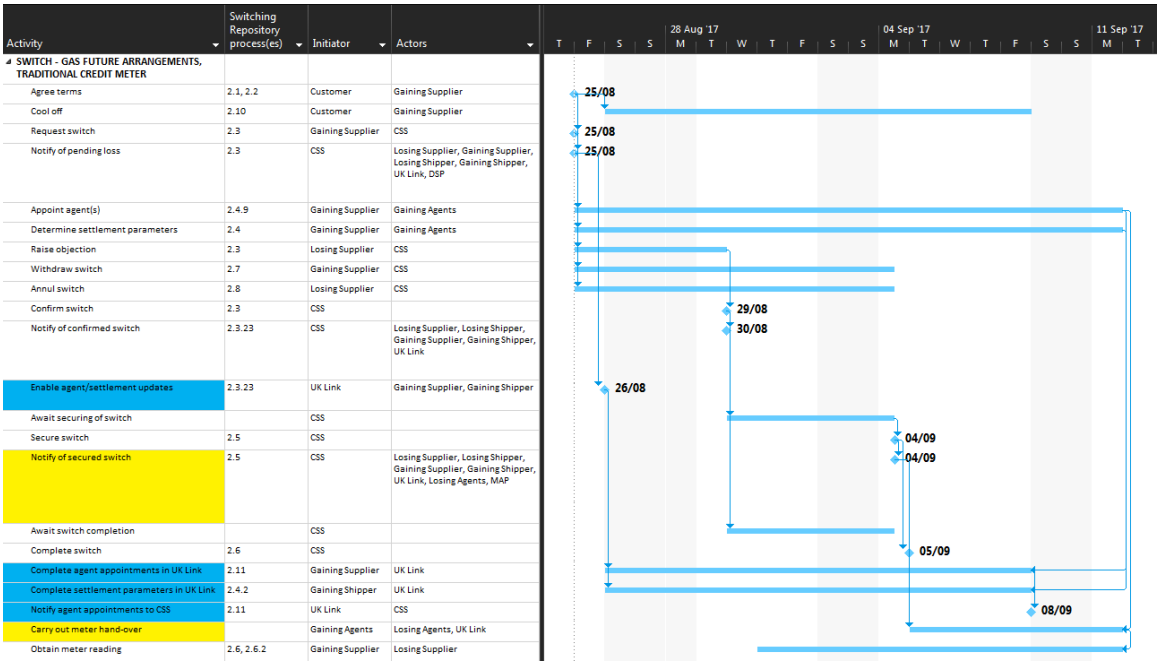
2. **Cool off** – A domestic consumer has 14 calendar days from the point at which terms are agreed to withdraw from the new arrangement; this time starts from the next calendar day. If the consumer does so before the switch becomes "secured", then the switch stops. If the consumer does so after the switch has either become "secured" or has "completed", then the consumer is given the option of returning to their old supplier on equivalent terms, going to a new supplier (both of which require a new switch to be raised), or staying with the new supplier on a deemed contract.
3. **Request switch** – The gaining supplier sends a switch request to CSS. The SSD of the request is initially expected to be around 5 working days in the future, moving to next working day for domestic consumers and 2 working days for non-domestic consumers. Once the switch has been validated, it is stored in CSS with a status of "validated".
4. **Notify of pending loss** – CSS notifies the losing supplier, losing shipper and losing agent(s) of the pending loss and its effective date; CSS also notifies the gaining supplier, gaining Shipper, UK Link, and DES.
5. **Appoint agent(s)** – The gaining supplier appoints a MEM. Execution of the switch is not dependent on completion of agent appointment. Note: If the gaining supplier only sends a partial registration without agent appointment details, then UK Link defaults the agents associated with the losing supplier to the gaining supplier.
6. **Determine settlement parameters** – The gaining shipper determines the settlement parameters. Execution of the switch is not dependent on determining the settlement parameters.
7. **Raise objection** – The losing supplier has a fixed "objection window" in which to raise an objection to the switch (up to 17:00 on the working day following the switch request submission for domestic switches, and up to 17:00 on the second working day for non-domestic switches). An objection is typically either because of contractual issues for non-domestic consumers or debt issues for domestic consumers. If an objection is raised within the window, then the switch stops.
8. **Withdraw switch** – The gaining supplier may withdraw the switch request, which cancels the switch. This may be done at any point before the switch is secured. Notifications of the withdrawal are sent at this point to all systems previously notified as part of the switch request.
9. **Annul switch** – The losing supplier may annul the switch request (for example if the consumer has notified that the switch is erroneous), which cancels the switch. This may be done at any point before the switch is secured. Notifications of the annulment are sent at this point to all systems previously notified as part of the switch request.
10. **Confirm switch** - If either the objection window has elapsed without an objection or a "no objection" response has been received, then the switch

request status becomes "confirmed". From this point, no objections are allowed.

11. **Notify of confirmed switch** - CSS notifies the losing supplier, losing shipper, losing agent(s) (MEM) and gaining supplier of the confirmed switch. CSS also notifies the gaining Shipper, UK Link, and DES.
12. **Enable agent/settlement updates** – UK Link enables the gaining shipper to enter agent and other details against this supply point, as a result of the notification from CSS of a confirmed switch. This enabling happens as part of the overnight update run where UK Link applies the changes sent by CSS during that working day
13. **Await securing of switch** – For a switch taking 5 working days to complete, there is a short period following confirmation. During this period, the switch may be annulled or withdrawn.
14. **Secure switch** – At 17:00 local time on the calendar day preceding SSD, the switch is made irrevocable and its status changes to "secured".
15. **Notify of secured switch** – CSS notifies the losing supplier, losing agent(s), losing shipper and gaining supplier of the secured switch. CSS also notifies the gaining Shipper, MAP, UK Link, and DES.
16. **Await switch completion** - The period between Secure switch and Complete switch (17:00 to 23:59 on the calendar day preceding the SSD).
17. **Complete switch** – At 00:00 on the SSD, the switch is completed and the incumbent supplier is changed in CSS.
18. **Complete agent appointments in UK Link** – The gaining shipper sends the new agent details to UK Link by the SSD.
19. **Complete settlement parameters in UK Link -** The gaining shipper must send the new settlement parameters to UK Link by the SSD. If no details are sent, then UK Link defaults the parameters associated with the losing supplier to the gaining supplier.
20. **Notify agent appointments to CSS –** UK Link notifies CSS of the new agent details.
21. **Carry out meter hand-over -** The gaining supplier notifies their appointed agents of the losing supplier agents. The agents exchange meter technical details and historical consumption data using data flows, and consequently the gaining supplier may subsequently update some details in UK Link.
22. **Obtain meter reading** – The gaining supplier obtains a meter read (through its agent or a consumers own read) and passes it to UK Link through the gaining shipper. This opening read can be taken between 5 days prior to SSD and 5 days after SSD. If no read has reached UK Link by 10 days after SSD, then UK Link estimates the read based on the historical data. UK Link sends the validated (or estimated if a read is not supplied) to the gaining and losing shippers who in turn provide it to the respective suppliers.

3.54. The switch is illustrated in Figure 13 below:

***Note**: Items in shaded backgrounds are time critical activities. They are grouped by the same colour*



Activity	Switching Repository process(es)	Initiator	Actors
SWITCH - GAS FUTURE ARRANGEMENTS, TRADITIONAL CREDIT METER			
Agree terms	2.1, 2.2	Customer	Gaining Supplier
Cool off	2.10	Customer	Gaining Supplier
Request switch	2.3	Gaining Supplier	CSS
Notify of pending loss	2.3	CSS	Losing Supplier, Gaining Supplier, Losing Shipper, Gaining Shipper, UK Link, DSP
Appoint agent(s)	2.4.9	Gaining Supplier	Gaining Agents
Determine settlement parameters	2.4	Gaining Supplier	Gaining Agents
Raise objection	2.3	Losing Supplier	CSS
Withdraw switch	2.7	Gaining Supplier	CSS
Annul switch	2.8	Losing Supplier	CSS
Confirm switch	2.3	CSS	
Notify of confirmed switch	2.3.23	CSS	Losing Supplier, Losing Shipper, Gaining Supplier, Gaining Shipper, UK Link
Enable agent/settlement updates	2.3.23	UK Link	Gaining Supplier, Gaining Shipper
Await securing of switch		CSS	
Secure switch	2.5	CSS	
Notify of secured switch	2.5	CSS	Losing Supplier, Losing Shipper, Gaining Supplier, Gaining Shipper, UK Link, Losing Agents, MAP
Await switch completion		CSS	
Complete switch	2.6	CSS	
Complete agent appointments in UK Link	2.11	Gaining Supplier	UK Link
Complete settlement parameters in UK Link	2.4.2	Gaining Shipper	UK Link
Notify agent appointments to CSS	2.11	UK Link	CSS
Carry out meter hand-over		Gaining Agents	Losing Agents, UK Link
Obtain meter reading	2.6, 2.6.2	Gaining Supplier	Losing Supplier

Figure 13 Switch - Gas Future Arrangements, Traditional Credit Meter

Switch Traditional Prepayment Meter

3.55. The switch of a traditional prepayment meter follows the same process as that for a traditional credit meter, with one additional activity. **Send top up device to consumer** is dependent on the completion of **Notify of confirmed switch**; it must be completed before **Secure switch**.

1. **Send top up device to consumer** – The gaining supplier sends the consumer a new payment device through the post (for example a card). This typically takes 3 working days to arrive.

Switch DCC-Enrolled Credit Meter

3.56. The switch of a DCC-enrolled credit meter generally follows the same process as that for a traditional credit meter, with a few differences as noted below, and one additional activity **Prepare for meter hand-over:**

1. **Notify of validated switch** - In addition, CSS notifies Smart Metering of the validated switch.
2. **Notify of confirmed switch** - In addition, CSS notifies Smart Metering of the confirmed switch.
3. **Notify of secured switch** –In addition, CSS notifies Smart Metering of the secured switch.
4. **Prepare for meter hand-over** – Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to Smart Metering. The first is Update Security Credentials (SR6.23), followed by a meter reading and other commands such as re-configuration of the meter for the new tariffs.
5. **Carry out meter hand-over** –The SR placing the gaining supplier's security credentials on the meter is executed.
6. **Obtain meter reading** – The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). Smart Metering allows both suppliers access to this log. If no read is taken, UK Link estimates the read based on historical data.

Switch DCC-Enrolled Prepayment Meter

3.57. The switch of a DCC-enrolled prepayment meter generally follows the same process as that for a traditional credit meter, with a few differences as described below, plus additional activities **Prepare for meter hand-over** and **Issue commands for meter hand-over**. Note that there is no need to send physical credentials through the post, as there is for a traditional prepayment meter.

1. **Notify of validated switch** - In addition, CSS notifies Smart Metering of the validated switch.
2. **Notify of confirmed switch** - In addition, CSS notifies Smart Metering of the confirmed switch.
3. **Notify of secured switch** – In addition, CSS notifies Smart Metering of the secured switch.
4. **Prepare for meter hand-over** – Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to Smart Metering. The first is Update Security Credentials (SR6.23), followed by a meter reading and other commands such as re-configuration of the meter for the new tariffs and including placing the meter in prepayment mode.
5. **Issue commands for meter hand-over** – The prepayment meter is changed to credit mode by the losing supplier.
6. **Carry out meter hand-over** –The SR placing the gaining supplier's security credentials on the meter is executed.

7. **Obtain meter reading** – The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). Smart Metering allows both suppliers access to this log. If no read is taken, UK Link estimates the read based on the historical data.

Functionality Common to both Electricity and Gas

Switch with DAP

3.58. If the prepayment consumer has debt then the gaining supplier may invoke the Debt Assignment Protocol (DAP), which has to be completed before the losing supplier will allow for a consumer to be switched away. Since this is a gaining supplier-to-consumer and gaining supplier to losing supplier interaction which precedes the contract and the switch request, it has no impact on the dependencies and timings of interactions during the switch. Until the DAP process has been concluded, the losing supplier will object to any subsequent switch requests.

3.59. See Process 2.2 Agree terms and prepare switching in the Switching Design Repository[1] for further details.

Switch Non-Domestic Consumer with Large Portfolio

3.60. The gaining supplier's system is used to track and monitor progress on the status of the switch for the group of RMPs that is involved in switching a non-domestic consumer with a large portfolio of RMPs. A separate switch request is submitted by the gaining supplier for each RMP and CSS and the other Central Data Services process each one individually. If a switch request is part of a group, this has no implication for dependencies and timings of interactions within CSS and the other systems.

Cancel Switch

3.61. A switch request may be cancelled as a result of any of the following:

- Raising of an objection by the losing supplier (Process 2.3 of Switching Design Repository[1]);
- Withdrawal by the gaining supplier (Anytime between submission of request in Process 2.3 and before Securing of Switch request in Process 2.5 of Switching Design Repository[1],); or
- Annulment by the losing supplier (Anytime between submission of request in Process 2.3 and before Securing of Switch request in Process 2.5 of Switching Design Repository[1],).

3.62. In each scenario, CSS sends the notification of cancellation to those parties already notified of the pending switch. Each party's system must be capable of processing the cancellation. In the case of a traditional prepayment meter, if a top up device has already been sent out to the consumer, then this will need to be disabled by the gaining supplier.

Cool Off

3.63. A consumer may exercise their right to "cool off" at any point up to 14 calendar days from the agreement of terms. This period begins on the calendar day following the day the terms are agreed.

3.64. If this is before the switch has been secured, the gaining supplier sends in a switch withdrawal. CSS cancels the switch and sends the notification of cancellation to those parties already notified of the pending switch, as in Cancel Switch above. Each party's system must be capable of processing the cancellation.

3.65. If this is after the switch has been secured, then a new switch is requested by the losing supplier (or a third supplier, should the consumer choose not to return to their original supplier), or the consumer stays with the gaining supplier on a deemed contract. This is separate from the original switch; the only dependency is that the original switch must have completed and the standstill period expired before the new switch request is submitted.

Rectify Erroneous Switch

3.66. If the switch was carried out in error, it can be rectified by:

- The gaining supplier withdrawing the switch if it has not yet been secured; or
- The losing supplier annulling the switch if it has not yet been secured; or
- The losing supplier (the supplier whom the erroneously switched away from) submitting a new switch request if the switch has been secured (following the initiation of the Erroneous Switch (ES) resolution process).

3.67. This is separate from the original switch; the only dependency is that the original switch must have completed before the new switch is submitted (the standstill period does not apply in this case).

3.68. The losing supplier will indicate in the new switch request that this is a resolution of an erroneous switch request so that CSS can provide differential processing (bypassing the standstill period) to a standard switch request.

3.69. As this is a new Switch Request, there is no dedicated process for this other than the initiation of the Erroneous Switch resolution process. The only difference is that the standstill period is not applied as this is a resolution of an Erroneous Switch. Refer to Process 2.3 Request Switch in the Switching Design Repository[1], for further details on the switch request submission process.

Initiate Registrable Measurement Point

3.70. In electricity, Distribution Network Operators (DNOs) are responsible for initiating new Registrable Measurement Points (RMP). This can either be a new physical connection, or by adding an additional meter to an existing connection, for example related RMPs. This will be reflected in MPAS and in turn, in CSS.

3.71. In gas, Gas Transporters (GTs) are responsible for initiating new RMPs. There is no concept of multiple RMPs at a single Supply Meter Point (SMP). Therefore, GTs will only set up one RMP for each SMP.

3.72. This is not a time bound activity. This will be set up in the source system (UK Link / MPAS) and be synchronised in CSS.

3.73. Refer to Process 1.2 Create RMP in the Switching Design Repository[1].

Initial Registration of Registrable Measurement Point

3.74. Suppliers will register an unregistered RMP which has been created and is operational. This will then allow the RMP to switch between Suppliers.

3.75. There is no time bound limit on the process other than the minimum time that this can take is the next calendar day, and the maximum time that this can take is 28 days where the request is sent 28 days prior to the effective from date.

3.76. Refer to Process 1.4 Initial Registration in the Switching Design Repository[1].

Terminate Registrable Measurement Point

3.77. When a RMP is disconnected or destroyed, the relevant network operator (DNO/GT) will undertake the necessary activities to reflect this in UK Link / MPAS, which in turn will result in a status update for the RMP in CSS.

3.78. Any switch requests that have been submitted but have not yet reached a status of validated will be rejected during validation if a RMP is terminated during this stage.

3.79. Any switch requests that are in-flight at this point (i.e. between validated and secured statuses), are automatically rejected and the relevant parties are notified.

3.80. Any switch requests that have already reached a secured status shall complete and become active registrations against the terminated RMP. It will be the responsibility of the gaining supplier to then deactivate the active registration; however, there are no obligations or implications upon them if they choose not to.

3.81. This is not a time bound activity. This will be updated in the source system (UK Link / MPAS) and be synchronised in CSS.

3.82. Refer to Process 3.1 Terminate RMP in the Switching Design Repository[1].

Update Registrable Measurement Point Details

3.83. Typically, RMP data is updated with a switch request. However, this can also happen outside of a Switch Request. Data that can be updated includes:

- Meter Asset Provider (MAP)
- MEM
- DC
- DA

- Domestic / non-domestic indicator
- Meter Point Location
- Related RMP set-up and management (association and designation of parent and children RMPs by incumbent supplier under Process 1.2.1 Request creation of associated RMP. The supplier requests to MPAS that the RMPs are related, with one designated as a parent and the other(s) as the child(ren)
- Shipper.

3.84. In addition to the updates above, the status of the RMP can be updated between the following states:

- Created
- Operational
- Dormant
- Terminated.

3.85. If a RMP is terminated in error, following investigation by the network operators concerned and Service Management coordination (or a similar approach), then the status of the RMP should be reinstated to one of the above valid states.

3.86. For all the above refer to Processes 2.13 Change of asset ownership, 2.11 Notify Appointment of new Supplier Agent, 2.12 Update Asset Deployment Information Following Replacement, 2.20 Registration Event, and 2.14 Update RMP in the Switching Design Repository[1].

Supplier challenge of a GB standardised address link

3.87. If a RMP has been linked to a GB standardised address (an address contained within a procured list containing all addresses in GB represented in a British Standard format), and a Supplier or another authorised party raises a request to challenge this, the request is allocated to Service Management to consider and action where appropriate.

3.88. Refer to Process 2.18 Process Supplier incorrect address challenge in the Switching Design Repository[1].

GB standardised address updates

3.89. If there is one or more RMPs linked to a GB standardised address, any updates to that GB standardised address will be reflected in CSS and passed on to the relevant enquiry system (ECOES and DES).

3.90. Refer to Process 2.16 Process GB standardised address update in the Switching Design Repository[1].

Meter Point Location updates

3.91. Where a Network (DNO / GT) updates the address of a Meter Point (Meter Point Location) and that address was previously linked to a GB standardised address, then CSS reflects this update.

3.92. Refer to Process 2.14 Update RMP in the Switching Design Repository[1].

4. Conclusions

Introduction

4.1. In reaching the conclusions, consideration has been taken of both:

- The overall switching timescale; and
- The detailed dependencies between processes and interactions between systems.

4.2. The main conclusions concern the timings by which existing systems and processes will need to interact with the new CSS; and where required any resulting changes to those systems are identified. Physical interface design, including possible "batch file" versus "messaging" considerations, are addressed within D-4.1.5 E2E Solution Architecture [2] document - not here.

UK Link updates

4.3. The E2E design states that CSS notifies UK Link of a switch request once that request has become "validated" and UK Link, in its next overnight update, opens the MPRN to the gaining shipper for update of agent/settlement details.

4.4. The E2E design states that settlement details may need to be updated in UK Link by the gaining shipper prior to the switch taking effect. The conclusion is therefore that there is time-criticality in UK Link's take-on of registration changes sent by CSS. However, provided that in any application of updates, UK Link applies CSS updates first (before shipper-originated updates), this will avoid gaining shipper updates failing. Application of switch-related updates sent from CSS to UK Link can take place in processes which run at intervals throughout the working day. The last run of the day is late in the evening, with a cut-off for receipt of updates at 23:00. This is as current practice.

4.5. As Switching will move from shipper-led in UK Link to supplier-led in CSS, there will need to be a mechanism for the settlement details, and any incoming MEM or MAP ID, to be entered into UK Link by the gaining shipper. This is required in the new arrangements as the switching process is being decoupled from UK Link, switch requests will be submitted by suppliers, but Shippers will retain the functionality to make updates in UK Link.

4.6. The frequency with which CSS sends updates to UK Link must support the planned UK Link update schedule (which it will do, since the intention is that updates are sent individually, as they are applied within CSS).

MPAS updates

4.7. The E2E design states that CSS notifies MPAS of a switch request once that request has become "validated" and MPAS, in its next update process, opens the MPAN to the gaining supplier for update of agent/settlement details.

4.8. Currently, there is one update process per day in MPAS to apply registration updates, in the evening on working days, for which the cut-off is 18:00. The E2E design states that agent and settlement details do not need to be updated in MPAS by the gaining supplier prior to the switch taking effect. The conclusion is therefore that there is no time-criticality in MPAS's take-on of registration changes sent by CSS. Application of switch-related updates sent from CSS to MPAS can take place in the existing process running overnight. However, the overnight update must apply CSS updates before those from suppliers, in order to avoid gaining supplier changes being rejected.

4.9. In the current arrangements, there is a difference in the timing of the working-day batch runs between UK Link and MPAS (in UK Link, updates received up to 23:00 are processed that night, whereas for MPAS the cut-off time for that day's processing is 18:00. If this practice continues under the new Switching Arrangements, then for a duel-fuel switch, the day on which the gaining supplier/shipper is able to update settlement/agent details in MPAS and UK Link could differ. In order to prevent this, and hence smooth the process for suppliers and shippers, the two systems' update schedules must be made consistent. MPAS should change to be consistent with UK Link, since the UK Link schedule spreads the updates across the day more evenly and allows for a later cut-off time each day.

4.10. The frequency with which CSS sends updates to MPAS must support the planned MPAS update schedule.

DES and ECOES updates

4.11. Currently, DES and ECOES are both updated in an overnight batch run by UK Link and MPAS respectively. Under the new arrangements, it will be necessary for CSS to send switch requests and other updates to DES and ECOES as they happen in a message-based manner and that these will be immediately reflected in ECOES and DES, in order that all industry parties can be aware of a switch as soon as it is initiated as well as any changes to its status.

Smart Metering updates - general

4.12. The current Smart Metering registration data is a batch file submitted by each MPAS (of which there are several instances, one for each Registration Data Provider) and UK Link, once a day, in the evening. Once the file has been processed, Smart Metering allows the gaining supplier (and gaining MEM) to send Service Requests to a smart meter to prepare for the meter hand-over (on the SSD, at 00:00). UK Link sends the switch notification to Smart Metering once the status is "CO" (confirmed) (this happens 2 business days before the SSD, when the switch has become irrevocable). MPAS sends the switch notification to Smart Metering at the end of the day on which it receives the switch request. This means that Smart Metering may have to remove the update made for electricity, to cater for the case where the proposed switch does not complete.

4.13. The E2E design states that CSS notifies Smart Metering of a switch request once that request has become "validated", and Smart Metering allows access to the gaining supplier to send future dated commands as soon as it receives this update from CSS.

4.14. The preparation for meter hand-over is carried out by the gaining supplier and consists of a number of Service Requests (SR) issued in a particular sequence. The first is SR6.23 Update Security Credentials (CoS), which may be sent as a future-dated command, and this is likely to be followed by the following commands (some of which may also be sent as future-dated commands):

- SR3.4 Update Supplier Name;
- SR3.1 Display Message;
- SR1.6 Update Payment Mode;
- SR1.1.1 Update Import Tariff (Primary Element);
- SR4.1.1 Read Instantaneous Import Registers;
- SR4.6.1 Retrieve Import Daily Read Log;
- SR6.8 Update Device Configuration (Billing Calendar);
- SR4.4.2 Retrieve Change of Mode/ Tariff Triggered Billing Data Log; and
- SR5.1 Create Schedule.

4.15. Further supplier-specific SR may then be sent, together with prepayment-related commands, if relevant.

4.16. Under the current arrangements, a future-dated SR6.23 is held by the Smart Metering central system) until 24 hours before it is due to be actioned, when it is sent to the meter. The meter stores it and actions at the appropriate time. This arrangement relies on the switch having been made irrevocable before sending to the meter, where it is difficult to cancel. Under the new arrangements (for both next-day and same-day switches), a switch will become irrevocable at 17:00 on the day before the SSD. Smart Metering will need to be changed so that the future-dated SR6.23 is sent to the meter only upon receipt of a notification from CSS that the switch has been "secured".

Smart Metering updates - Service Request future-date processing

4.17. Currently, the Smart Metering Change of Supplier (CoS) Service Request (SR) can be submitted by the gaining supplier to be actioned at a time in the future. Smart Metering holds the SR until 24 hours before it is due to be actioned, at which point it is sent to the smart meter to store and action at the appropriate time. The switch has become irrevocable before the SR is sent to the meter (once on the meter late cancellation of the switch and undoing of a CoS SR is difficult).

4.18. Under the new arrangements this will need to change, because gate closure will be less than 24 hours before the switch becomes effective. Smart Metering will need to store the CoS SR until informed of the switch being secured and at that point send the SR to the meter.

Smart Metering updates - gaining MEM

4.19. Currently, MPAS and UK Link notify Smart Metering of the gaining MEM (formerly referred to as MOP and MAM respectively) via RDP flows over the Gamma network. In the future arrangements CSS will replace this process and directly notify Smart Metering of the gaining MEM; this may be done later than the notification of the associated pending switch request, due to the MEM changes being sent once a day from MPAS and UK Link to CSS. This does not pose a choreography problem,

because in Smart Metering, the MEM does not need to do a read immediately - it can read the appropriate consumption log up to 31 days after the switch event.

Timing of gate closure

4.20. Gate closure in gas (where a switch becomes irrevocable) currently happens two working days before the SSD and in electricity effectively one working day before SSD (the switch may be withdrawn up to or on 2 working days before SSD). Gate closure ("securing" of the switch) under the new arrangements has been assumed in the design work to happen at 17:00 on the calendar day immediately preceding the SSD for both energy types.

4.21. The questions posed to validate the time of 17:00 concerned whether:

- the gaining supplier would have sufficient time between 17:00 and 23:59 to set up the required SRs to take over the meter in a timely fashion (which should happen at 00:00 on the day following gate closure);

- for a prepayment meter, the losing supplier would have sufficient time between 17:00 and 23:59 to set the meter into Credit Mode; and

- the Smart Metering system would have enough time to release future-dated CoS SRs to meters between 17:00 and 23:59.

4.22. The gaining supplier should bear in mind the time needed for setting up commands to take over the smart meter when it agrees an SSD with the consumer, therefore this is not a reason for applying a constraint on the timing of gate closure. A losing supplier should have sufficient time between 17:00 and 23:59 to set a prepayment smart meter into credit mode, a process which would lend itself to being automated. We have no evidence to suggest the Smart Metering system would be incapable of handling the predicted volume of switches between 17:00 and 23:59. A piece of work needs to be undertaken to model the length of time needed for CSS to process the switches at gate closure, transmit to Smart Metering the switches which are going ahead, and for Smart Metering to send any associated Service Requests to the meters. This work can be done when the CSS design work is more advanced. If this work concludes that this can be completed in significantly less than 7 hours, then the Programme should consider moving the gate closure to later than 17:00. For the moment, the design has proceeded with the assumption of gate closure at 17:00.

4.23. At an earlier stage in the Programme, there was a concept of the losing supplier having to "release" the DCC-enrolled meter before the gaining supplier took control. In practice, this is not consistent with Smart Metering functionality and is no longer required. The gaining supplier may carry out a Change of Supplier (SR 6.23) thereby gaining control of the meter at any time after 00:00 on the SSD, regardless of actions taken or omitted by the losing supplier.

Local/UTC time and DCC-enrolled meters

4.24. Smart Metering and its meters function in Universal Time Clock (UTC), while other Central Data Services, as well as the suppliers' and network operators'

systems, function according to local time. During winter, UTC and local time are aligned. When British Summer Time (BST) is in force, local time is one hour ahead of UTC. There will be a one-hour period during BST (from 00:00 to 01:00 local time) when following a switch, a supplier has legal responsibility for a DCC-enrolled meter, but cannot yet place its credentials on that meter (in other words cannot access that meter). This is an issue currently and it is assumed that this will continue under the new arrangements because the hour's difference is not material and will not impact consumers.

Electricity and gas days

4.25. Currently, the point at which a gaining supplier takes responsibility for a Registerable Metering Point (RMP) is 00:00 in both electricity and gas (the start of a calendar day). For electricity, this is aligned with the start of the day for settlement purposes. For gas, the settlement start-of-day is 05:00. It is assumed that this remains unchanged.

4.26. In gas, however, the point at which a gaining supplier becomes responsible for an RMP may be specified otherwise in a contract between consumer and supplier; this may be the case for some non-domestic consumers.

Timing of switch for traditional prepayment meter

4.27. Where a top-up device needs to be sent by post to the consumer, the supplier needs to ensure it has arrangements in place to ensure the customer receives the device within five working days.

Appendix 1 - Glossary

A glossary of terms used in the Switching Programme can be found in the list of Defined Terms. Those terms used in this document which are not part of the Defined Terms are listed below.

ABACUS	Enterprise Architecture tool, used to hold the data model, business process descriptions, and other artefacts.
API	Application Program Interface
CNF	Confirmation File
CRO	Customer Requested Objection
DAP	Debt Assignment Protocol
DCC enrolled meter	A meter included in the Smart Meter programme
DSP	Data Services Provider. This is a Service Provider of the Data Communications Company
DTN	Data Transfer Network, operated by Electralink
DUIS	DCC User Interface Specification
Dual fuel	Gas being supplied to and Electricity being supplied to/exported from the same location
E2E	End-to-End
IXN, IX Network	Network over which gas data flows are transmitted between shippers, transporters, and UK Link.
MIS	Market Intelligence Service
MPAS	Meter Point Administration Service
MPxN	Generic term to include MPANs and MPRNs indicating any generic meter reference number
MRA	Meter Reading Agent
One-fail-all-fail	A dependency between a group of switch requests which causes the entire group to fail if one of the group fails
Prepayment	A mode of payment collection where the consumer pays up front for a set amount of energy
RGMA	Review of Gas Metering Arrangements
S1SP	SMETS1 Service Provider
SMETS1	Smart Metering Equipment Technical Specification - First generation smart meters
SMETS2	Smart Metering Equipment Technical Specification - Second generation smart meters
SR	Service Request
SSD	Supply Start Date
SMP	Supply Meter Point
Smart Metering	The Smart Metering system operated by the DCC, which allows Users to communicate with DCC-enrolled smart meters. The DSP is a constituent of the system.
UK Link	Systems that support the competitive gas market, commercial balancing of the gas network, and transportation and energy charging to shippers, operated by Xoserve.