

Switching Programme - Operational Choreography

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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 for example, by way of an "in day" schedule or a "switching" schedule.

Associated documents

- [1] D-4.1.2 E2E Detailed Design Models
- [2] D-4.1.3 E2E Data Architecture and Data Governance
- [3] D-4.1.5 E2E Solution Architecture

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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 system, 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 way existing systems and processes will need to interact with CSS; resulting changes to those systems are identified.

For UK Link, there is no choreography requirement to change the existing timetable and mechanism of overnight batch update. The amendment of agent and settlement details is dependent on this overnight update, for which there is no time criticality, as they are not necessary before switch execution.

For the same reason, an overnight batch update for MPRS also meets the choreography requirements. However, the current MPRS overnight batch update timetable is different from UK Link; the MPRS timetable must be brought in line with UK Link to ensure consistency across the fuel types, to support the increasingly important dual-fuel switches.

The link between CSS and Smart Metering will be a real-time interface, with real-time application of updates in Smart Metering. This is to allow sufficient time for gaining suppliers to prepare for the hand-over of smart meters in the new arrangements.

The CSS/ECOES and CSS/DES links (or CSS to any future MIS) will similarly be real-time interfaces, with updates being applied in real-time. This will ensure consistency of information across the Central Data Services, so that when a switch is in progress, PCWs and all other Users can see the pending switch.

A change will be needed to the way the Smart Metering processes future-dated Change of Supplier Service Requests, so that these are held for longer within the DSP and are released to the meter only upon receipt of a notification from CSS that the switch has been secured (is now irrevocable). This will avoid having Service Requests sent to the meter which later may need to be reversed.

It has also been concluded that both next-day and same-day switches of traditional pre-pay meters are unrealistic, due to the need for new pre-pay devices to be sent in the post.

Gate closure, when a switch becomes irrevocable, is currently assumed to be 17:00 on the day preceding the SSD. Further work will be needed following CSS detailed design to validate this. A later gate closure may be possible and this will be examined in the subsequent work.

1. Introduction

Scope and Approach

1.1. This document is based on the end-to-end solution¹, 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 meter readings have been obtained for opening statements and closing bills, considering the major interactions between the systems during this process. The basic business scenarios considered are:

- Switch:
 - Traditional credit meter;
 - Traditional pre-pay meter;
 - DCC-enrolled credit meter;
 - DCC-enrolled pre-pay meter;
- Registrable Measurement Point (RMP):
 - Creation and initial registration;
 - Termination;
- Out-of-switch-cycle update

1.2. A "traditional" meter is any meter which is not DCC-enrolled. This covers smart-type meters, such as AMR, as well as SMETS1 meters which are not DCC-enrolled. A DCC-enrolled meter may be either a SMETS1 or a SMETS2 meter.

1.3. 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 and data passed in each interaction between systems. The intention is not that this document replaces information in

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

1.4. This document part of a suite of documents that should be read in association with the Switching Design Repository. This document provides input for the D-4.1.5 E2E Solution Architecture ^[3] document, particularly for the nature of the interfaces between CSS and the other Central Data Services.

Current Switching Arrangements

1.5. The current switching arrangements are briefly described, separately for electricity and for gas.

New Switching Arrangements

1.6. The overall timeline for a switch during the transitional period is described, along with that for next-day switching. Same-day switching is also considered, since this capability will be designed into the CSS from the outset. The next 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 and DES.

1.7. A description of the new switching arrangements in electricity and in gas is followed by a section on processing common to both fuel types.

2. Current Switching Arrangements

Introduction

2.1. The main switching business scenarios are:

- Traditional credit meter;
- Traditional pre-pay meter;
- DCC-enrolled credit meter; and
- DCC-enrolled pre-pay 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;
- 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). The SSD can be the following calendar day or up to 28 calendar days ahead. Typically, the SSD is between 14 and 21 days in the future.
2. **Cool off** - The 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 stops.
3. **Request switch** - The gaining supplier sends a switch request to MPRS, typically within a few days of the agreement with the consumer. This request is submitted as a batch file. During each working day, MPRS 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** – MPRS notifies the losing supplier of the pending loss and its effective date in an overnight batch run.
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.
6. **Determine settlement parameters** – The gaining supplier determines the settlement parameters such as measurement class (half-hourly/non-half-hourly). 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 (5 working days, with the first day being when the loss notification is received). An objection is typically raised either because of contractual or debt issues with the consumer, or because of a Customer Raised Objection 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 immediately. If the issue is resolved, the losing supplier removes the objection and the switch proceeds. If the issue is not resolved, then the switch stops. The objection resolution window is currently 1 working day.
8. **Withdraw switch** – The gaining supplier may withdraw the switch request, for example if the consumer withdraws under cooling off, 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 extant supplier.
12. **Complete agent appointments in MPRS** – Agent appointment details must be sent into MPRS within 5 working days after the SSD. If no details are sent, then MPRS carries forward to the gaining supplier the agents associated with the losing supplier.
13. **Complete settlement parameters in MPRS** – Details of the new settlement parameters must be sent into MPRS within 5 working days after the SSD. If they are not updated, then MPRS carries forward the old parameters.
14. **Carry out meter hand-over** – Agents exchange meter technical details and historical consumption data using data flows over the DTN and may update some details in MPRS.
15. **Obtain meter reading** – The gaining supplier takes a meter read and passes it to the losing supplier. If no read is taken, the gaining supplier’s



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DC estimates the read based on the 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 the following diagram.

-  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).

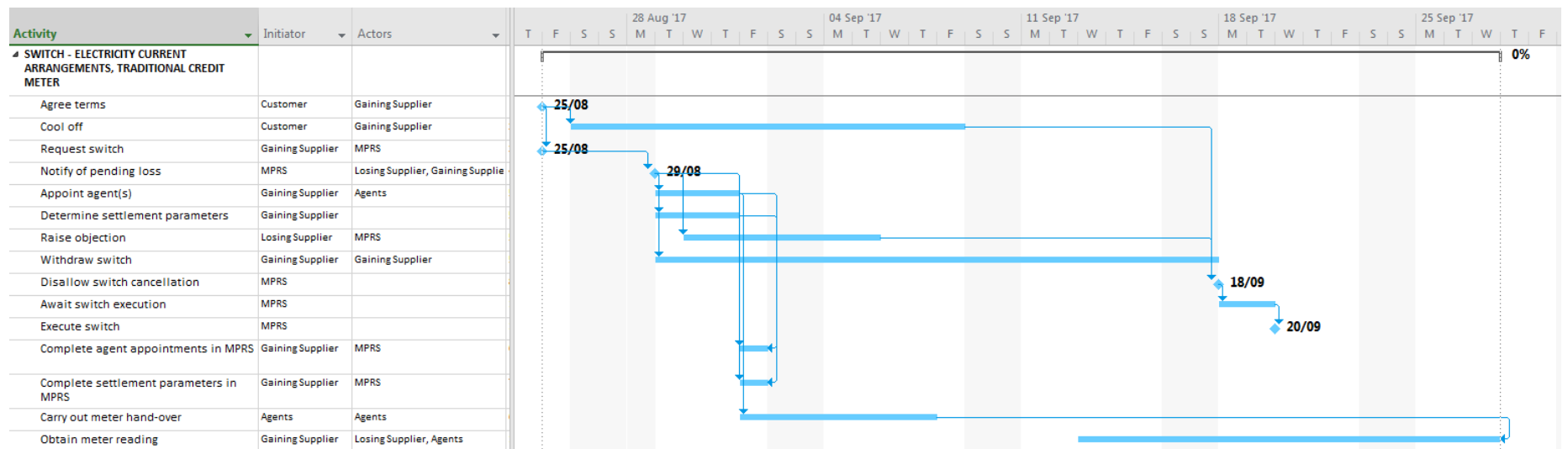


Figure 1 Switch - Electricity Current Arrangements, Traditional Credit Meter

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 SSD can be between 14 calendar days and 30 working days ahead. In practice, most suppliers agree an SSD around 17 days ahead. 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).
2. **Cool off** – The consumer has 14 calendar days prior to the Supply Start Date (SSD) to withdraw from the new arrangement. If the consumer does so, the switch stops.
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. 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.
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 data flows on the IXN. Execution of the switch is not dependent on completion of agent appointment.
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. 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 carries forward to the gaining supplier the agent associated with the losing 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) and passes it to 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 the historical data.

2.6. The switch is illustrated in the following diagram.

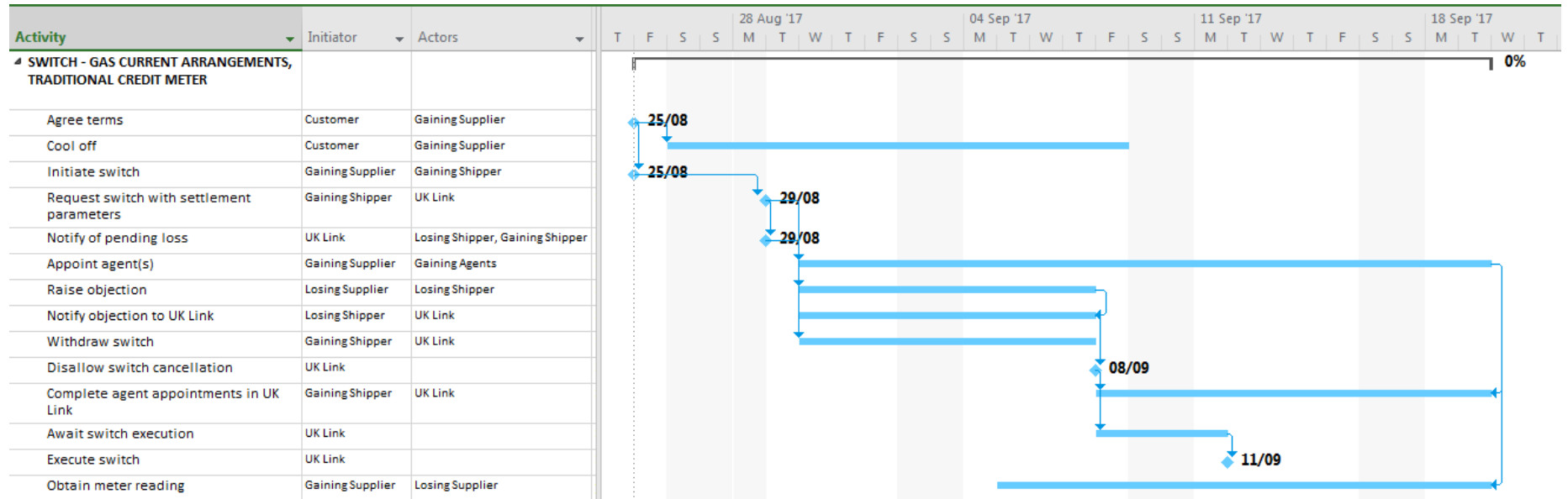


Figure 2 Dependencies for Switch - Gas Current Arrangements, Traditional Credit Meter

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.

Operation during transitional period

3.2. When the system goes live, there will be a transitional period, when suppliers will be expected to complete a switch in five working days. 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.

3.3. The diagram below illustrates the expected timeline for a domestic switch. The switch request is entered at any point on 31/07/2017 and once it has been accepted by the system, 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 takes effect at 00:00 on 05/08/2017.

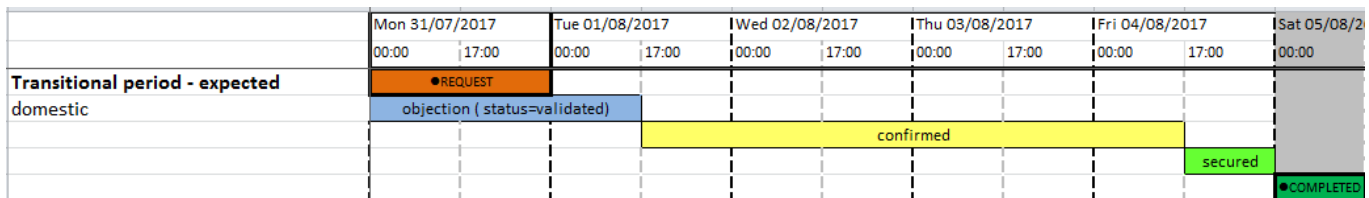


Figure 3 - Five working day domestic switch

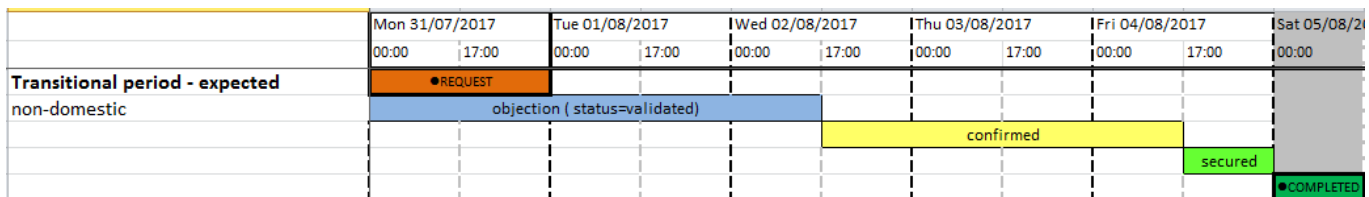


Figure 4 - Five working day non-domestic switch

3.4. 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. It is possible that obligations will be placed on suppliers wishing to complete switches in less than 5 working days.

3.5. The diagram below illustrates the next-day switch.

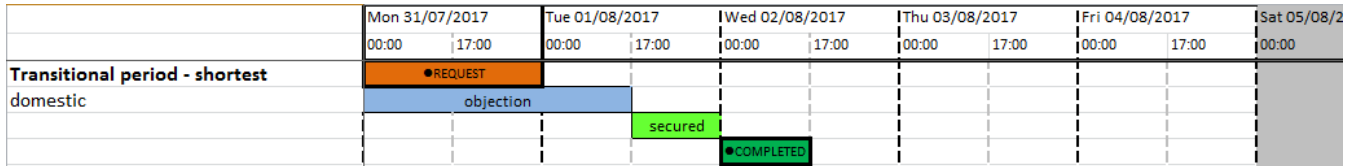


Figure 5 Fastest possible domestic switch

3.6. The diagram below illustrates the fastest possible non-domestic switch.

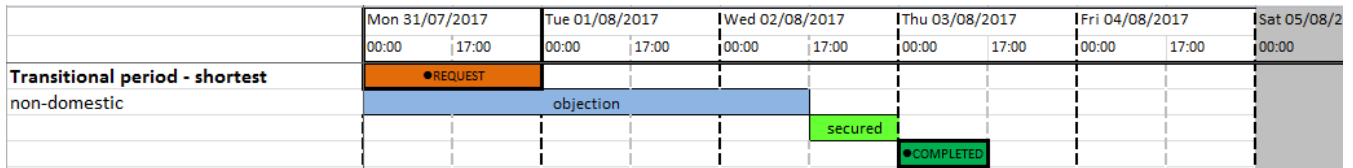


Figure 6 Fastest possible non-domestic switch

Operation after transitional period – next-day switch

3.7. The transitional period is currently intended to last 3 months, after which suppliers will be expected to be able to offer next-day switches as a matter of course.

Possible future operation – same-day switch

3.8. In the longer term, and following a consultation, it is possible that the time to effect a switch may be further reduced. 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.

	Mon 31/07/2017	Tue 01/08/2017
	00:00	00:00
	17:00	
Same-day switch	●REQUEST	
domestic and non-domestic	●OBJ RESPONSE	
		secured
		●COMPLETED

Figure 7 - Same-day switch

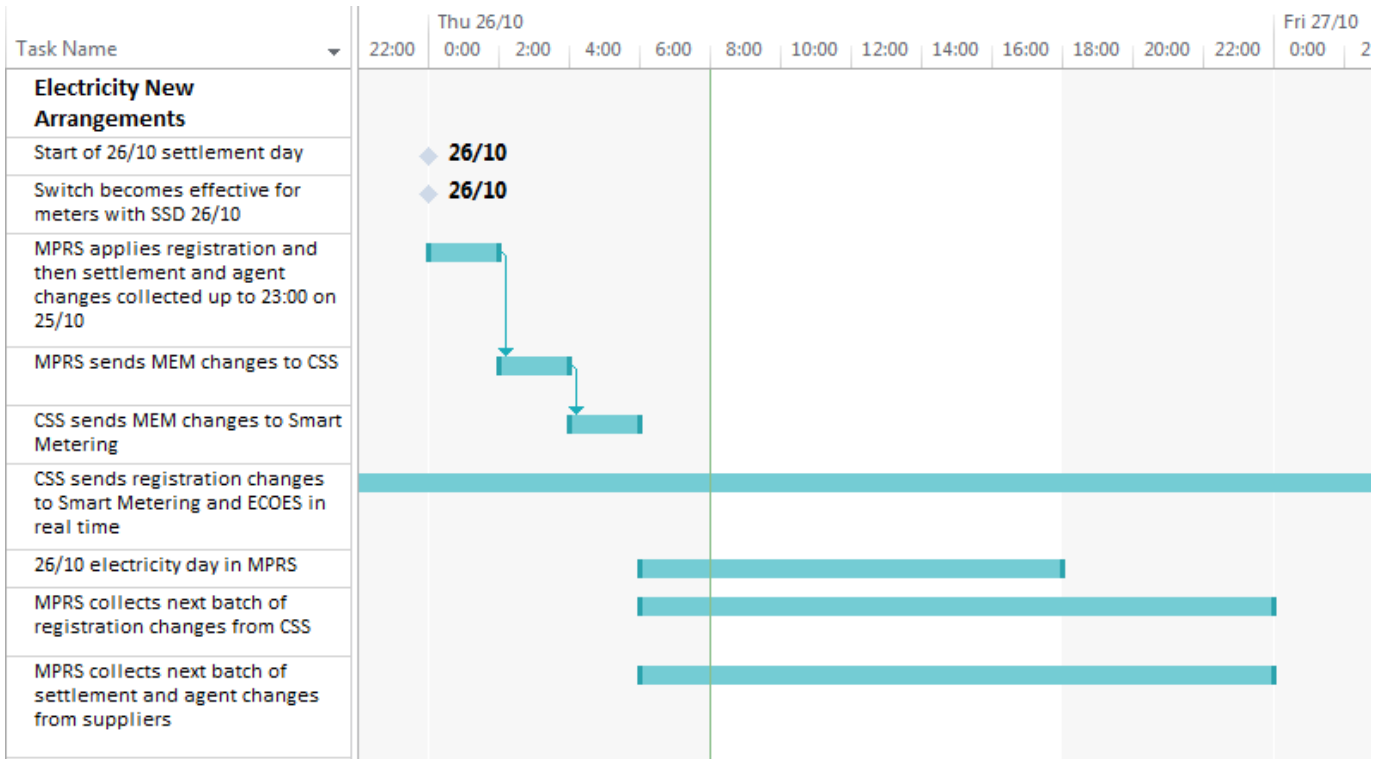
Events in Operational Day

3.9. Some interactions between systems are real-time, whereas others are batch. 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

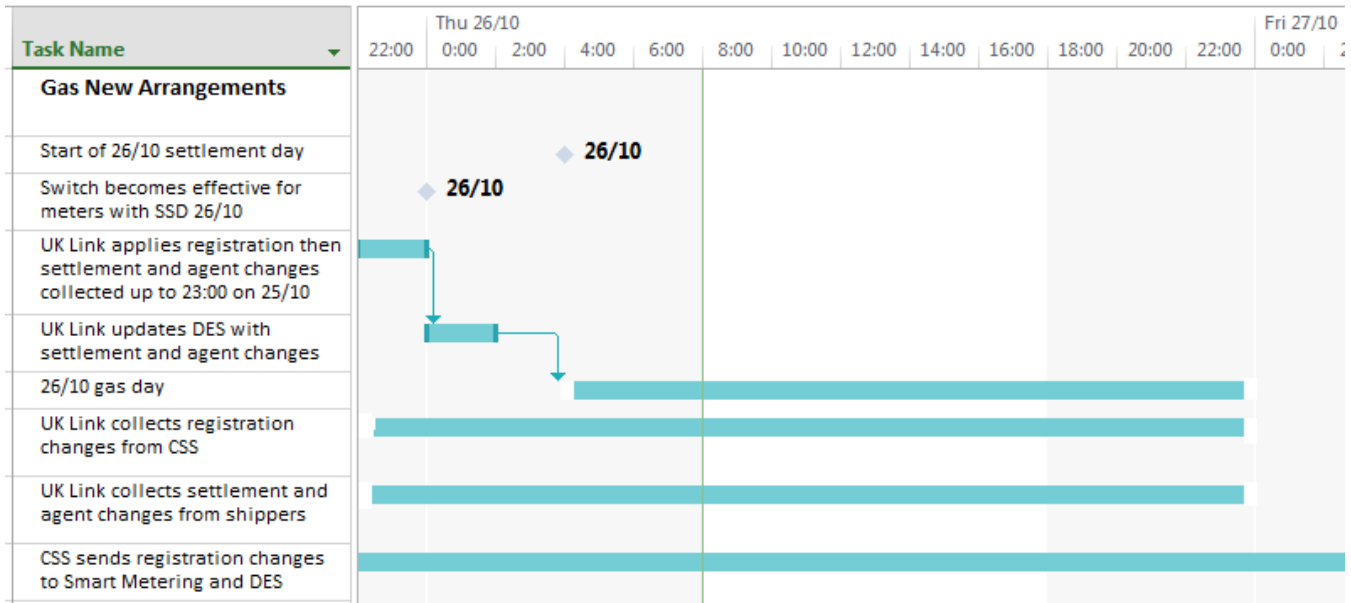
3.10. The settlement day for electricity starts at 00:00, at the same time as any switches for that day become effective. At around this time, MPRS applies the files collected up to 23:00 on the previous day. These are both file(s) from CSS and file(s) containing settlement and agent changes from suppliers (which may be for immediate application or be "pending" to become effective at a future date). The CSS files are applied first, because there may be pending switches for which the gaining supplier has sent in agent or settlement details that day; MPRS must register the pending switch before the gaining supplier is allowed to update agent/settlement details. Following this, MPRS sends any MEM changes to CSS and CSS sends these to the Smart Metering system, to enable the new MEMs 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. MPRS collects files of settlement and agent changes from its start-up at 06:00 until 23:00.

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Gas Operational Day

3.11. Switches for a given day become effective at 00:00 and the settlement day for gas starts at 05:00. At a time in the early morning (before 05:00), UK Link applies the files collected up to 23:00 on the previous day. These are both file(s) from CSS and file(s) containing settlement and agent changes from shippers. The CSS files are 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 supplier is allowed to update agent/settlement details. CSS registration changes are sent to Smart Metering and DES at any time during the day, as soon as CSS has processed them. UK Link collects files of settlement and agent changes from its start-of-day at 05:00 until 23:00.



Assumptions and Conclusions

Approach

3.12. 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. An example is the frequency of update of MPRS 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 into UK Link and MPRS settlement and agent details relating to the switch. The assumption was made that the UK Link and MPRS systems would **not** need to apply the changes in real-time, but that batch runs (either overnight or in batches at intervals during the day) would be adequate. This is as current practice. The assumption was tested by determining whether agent details need to be updated before the switch takes place: if the switch is dependent on updated agent details, then there would be inadequate time to enter the new agent/settlement details. In fact, the E2E design does **not** require agent details to be updated before effecting the switch, so this assumption was upheld.

3.13. Each assumption/conclusion is described below.

UK Link updates

3.14. The E2E design states that CSS notifies UK Link of a switch request once that request has become "confirmed" and UK Link, in its next batch run, opens the MPxN to the gaining shipper for update of agent/settlement details.

3.15. The E2E design states that agent and settlement details do not need to be updated in UK Link by the gaining shipper prior to the switch taking effect. The conclusion is therefore that there is no time-criticality in UK Link's take-on of registration changes sent by CSS. Application of switch-related updates sent from CSS to UK Link can take place in batch 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.

3.16. As Switching will move from shipper-led to supplier-led, 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.

3.17. The frequency with which CSS sends updates to UK Link must support the planned UK Link update schedule.

MPRS updates

3.18. The E2E design states that CSS notifies MPRS of a switch request once that request has become "confirmed" and MPRS, in its next batch run, opens the MPxN to the gaining supplier for update of agent/settlement details.

3.19. Currently, there is one batch run per day 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 MPRS by the gaining supplier prior to the switch taking effect. The conclusion is therefore that there is no time-criticality in MPRS's take-on of registration changes sent by CSS. Application of switch-related updates sent from CSS to MPRS can take place in the existing batch process running overnight.

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

3.21. The frequency with which CSS sends updates to MPRS must support the planned MPRS update schedule.

Smart Metering updates

3.22. The current Smart Metering registration data interface is a batch file submitted by each of MPRS (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" (this happens 2 business days before the SSD, when the switch has become irrevocable). MPRS 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.

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

- 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.

3.24. Further supplier-specific SRs may then be sent, together with pre-pay-related commands, if relevant.

3.25. Under the current arrangements, a future-dated SR6.23 is held by the DSP (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. The DSP 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".

DES and ECOES updates

3.26. Currently, DES and ECOES are both updated in an overnight batch run by UK Link and MPRS 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 and that these will be immediately reflected in ECOES and DES, in order that all industry parties can be aware a switch as soon as it is initiated.

Electricity and gas days

3.27. Currently, the point at which a gaining supplier takes responsibility for the RMP is 00:00 in electricity and 05:00 in gas. 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.

3.28. In gas, the point at which a gaining supplier becomes responsible for a RMP registration will change to 00:00, unless specified otherwise in a contract between consumer and supplier; this may be the case for some non-domestic consumers. The system will be agnostic to these differences.

DSP Service Request future-date processing

3.29. 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. The central system (the DSP) holds the SR until 24 hours before it is due to be actioned, at which point it is sent to meter to store and action at the correct time. The switch has become irrevocable before the SR is sent to the meter (late cancellation of the switch and undoing a CoS SR once on the meter is difficult).

3.30. Under the new arrangements this will need to change, because Gate Closure will be less than 24 hours before the switch becomes effective. The DSP will need to store the CoS SR until informed of the switch being secured and at that point send the SR to the meter.

Notification to Smart Metering of gaining MEM

3.31. Currently, MPRS notifies Smart Metering of the gaining MEM (formerly referred to as MOP). In the future arrangements CSS will notify Smart Metering of the gaining MEM; this may be done slightly later than the notification of the associated pending switch request, due to the MEM changes being sent once a day from MPRS 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

3.32. Gate closure (where a switch becomes irrevocable) currently happens two working days before the 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 working day immediately preceding the SSD.

3.33. 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 pre-pay 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.

3.34. 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 pre-pay 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.

Local/UTC time and DCC-enrolled meters

3.35. Smart Metering and its meters function in UTC, while other Central Data Services, as well as the suppliers' and network operators' systems, function according to local time. During winter-time, 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). It is assumed that this will continue under the new arrangements because the hour's difference is not material and will not impact consumers.

Timing of switch for traditional pre-pay meter

3.36. Due to the need to mail new access credentials to the consumer, it is unlikely that switching a traditional pre-pay meter will be possible in less than 5 working days.

E2E Functions not Addressed in this Document

Energy Trading and Settlement

3.37. For electricity settlement, following a switch, updates can be made retrospectively to change or rectify settlement-related items. Network balancing should not need to change as the result of a switch, because the consumer will be using the same amount of energy regardless of which supplier provides it. 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, none of energy trading, network balancing nor settlement need place any constraints on the new switching arrangements for electricity.

3.38. 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 batch run of UK Link carries out all the relevant updates for the coming day in the early hours of the morning. Neither network balancing nor settlement need therefore place any constraints on the new switching arrangements for gas. **A check is in progress regarding the possible constraints imposed by gas trading, the result of which will be included in the final version of this document.**

One-Fail-All-Fail Processing

3.39. 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

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

Related MPxNs

3.41. No business scenario has been defined for related MPxNs (an export and an import MPAN at a single address). The life-cycle and dependencies are the same as for an individual switch.

Other Issues

SMETS1 Meters

3.42. As far as switching is concerned, SMETS1 meters which are DCC-enrolled can be considered as equivalent to SMETS2 meters. DUIS Service Requests are used to communicate with both types of smart meter and the Change of Supplier process is the same on both. The new User Role introduced to manage SMETS1 meters (S1SP) is not relevant to switching because the User is set up when the meter is created and the relationship between User and meter does not change.

3.43. Currently the S1SP Users obtain an update to the DSP's 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

3.44. The different basic business scenarios for a successful switch in electricity are:

- Traditional credit meter;
- Traditional pre-pay meter;
- DCC-enrolled credit meter;
- DCC-enrolled pre-pay meter;
- Initial registration and creation of an RMP;
- Termination of an RMP; and
- Out-of-switch-cycle updates (for example, to agents).

3.45. Each of the first four follows a similar pattern. The traditional credit meter switch is described in detail and serves as a model for the others. For the following three scenarios, only the differences from the traditional credit meter are given. The last three are described in the *Functionality Common to both Electricity and Gas* section.

Summary of Switch Business scenarios

3.46. The activities relevant to each scenario are summarised in the following table. 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. The mapping to processes is given in the Gantt charts describing the dependencies between activities.

Activity Ref	Activity	Electricity				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
1	Agree terms	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Electricity				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
2	Cool off	✓	✓	✓	✓	The same for all scenarios.
3	Request switch	✓	✓	✓	✓	The same for all scenarios.
4	Notify of pending loss	✓	✓	✓	✓	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 MPRS/UK Link	✓	✓	✓	✓	The same for all scenarios.
10	Annul switch	✓	✓	✓	✓	The same for all scenarios.
11	Send new access credentials to consumer	x	✓	x	x	This activity is only relevant to traditional pre-pay 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 DSP.
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 DSP.
17	Prepare for meter hand-over	x	x	✓	✓	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	x	x	x	✓	This activity is only relevant to DCC-enrolled pre-pay meters; the losing supplier places the meter in credit 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 MPRS/UK Link	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Electricity				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
22	Complete settlement parameters in MPRS/UK Link	✓	✓	✓	✓	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 MPRS.
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

3.47. Table 2 below describes the parties involved in each activity. The parties are divided into:

- Initiator; and
- Parties Involved.

3.48. 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.

3.49. The dependencies between the activities are also shown. Activity number 3 (**Request switch**) 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 MPRS**) has a Finish-to-Finish dependency on activity 9 (**Appoint agent(s)**): **Complete agent appointments in MPRS** can only finish once **Appoint agent(s)** has finished. 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	Consumer	Gaining Supplier
3	Request switch	1	Gaining Supplier	CSS
4	Notify of pending loss	3	CSS	Losing Supplier, Gaining Supplier, ECOES
5	Appoint agent(s)	4	Gaining Supplier	Gaining Agent(s)
6	Determine settlement parameters	4	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	8	CSS	Losing Supplier, Losing Agent(s), Gaining Supplier, MPRS, ECOES, DSP
12	Enable agent/ settlement updates in MPRS	8	MPRS	Gaining Supplier
13	Send new access credentials to consumer (PPM)	9	Gaining Supplier	Consumer
14	Await securing of switch	8	CSS	
15	Secure switch	8,14	CSS	
16	Notify of secured switch	15	CSS	Losing Supplier, Losing Agent(s), MAP, Gaining Supplier, MPRS, ECOES, DSP
17	Prepare for meter hand-over	11	Gaining Supplier	DSP
18	Issue commands for meter hand-over	16	Losing Supplier	DSP
19	Await switch completion	15	CSS	
20	Complete switch	17, 18	CSS	
21	Complete agent appointments in MPRS	9,11FF	Gaining Supplier	MPRS

Activity Ref	Activity	Dependent on Activity	Initiator	Parties Involved
22	Complete settlement parameters in MPRS	9,12FF	Gaining Supplier	MPRS
23	Notify agent appointments to CSS	21	MPRS	CSS
24	Carry out meter hand-over	5FF,16 (Traditional) 20 (DCC enrolled)	Gaining Agents(s) or Gaining Supplier	Losing Agents(s), MPRS or DSP
25	Obtain meter reading	24FF	Gaining Agents(s) or Gaining Supplier	Losing Agents(s) or Losing Supplier Or DSP

Table 2 Electricity Switch dependencies

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

- MPRS enabling agent/settlement detail updates; and
- CSS notifying DSP of secured switch.

3.51. Activities 11 and 12 involve CSS notifying MPRS of a pending switch and MPRS enabling the gaining supplier to start entering agent and other details against the metering point in MPRS. Agent and settlement details do not have to be completed before the switch happens, but it with a shorter switch time, it will be helpful if the gaining supplier can start updating MPRS 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 pre-pay meter). If the gaining supplier has not already sent commands to the DSP 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 the DSP, the DSP 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

3.53. The following activities take place:

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 (for domestic consumers or following two working days for non-domestic consumers) or up to 28 calendar days ahead. The SSD is initially expected to be around 5 working days in the future. The gaining supplier may use ECOES (via its API) to determine incumbent agents, metering address and technical details.

2. **Cool off** – The 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 stay with the new supplier.
3. **Request switch** – The gaining supplier sends a switch request to CSS, which is validated and stored in CSS with a status of “validated”.
4. **Notify of pending loss** – CSS notifies the losing supplier and gaining supplier of the pending loss and its effective date. CSS also notifies ECOES.
5. **Appoint agent(s)** – The gaining supplier appoints a Metering Equipment Manager (MEM), Data Collector (DC) and Data Aggregator (DA) using data flows over the DTN. Execution of the switch is not dependent on completion of agent appointments.
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 or debt issues with the consumer, or because of related MPANs. 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 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 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 MPRS and ECOES.
12. **Enable agent/settlement updates** - MPRS 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 batch run where MPRS 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 may be annulled or withdrawn.
14. **Secure switch** - At 17:00 on the working 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 the MAP, MPRS and ECOES.
16. **Await switch completion** - The period between Secure switch and Complete switch (17:00 to 23:59 on the working 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 MPRS** - The gaining supplier sends agent appointment details into MPRS after switch confirmation which can go beyond the SSD. If no details are sent, then MPRS carries forward to the gaining supplier the agents associated with the losing supplier.
19. **Complete settlement parameters in MPRS** - The gaining supplier sends details of the new settlement parameters into MPRS after switch confirmation which can go beyond the SSD. If they are not updated, then MPRS carries forward the old parameters.
20. **Notify agent appointments to CSS** - MPRS notifies CSS of the new agent details.
21. **Carry out meter hand-over** - Agents exchange meter technical details and historical consumption data using data flows over the DTN and may update some details in MPRS.
22. **Obtain meter reading** - The gaining supplier takes a meter read (via its agents) and passes it to the losing supplier. If no read is taken, the gaining supplier's DC estimates the read based on the historical data. The read can be taken after confirmation (up to 5 working days before SSD) and must be at the latest on the fifth working day following the SSD.

3.54. The switch is illustrated in the following diagram:

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

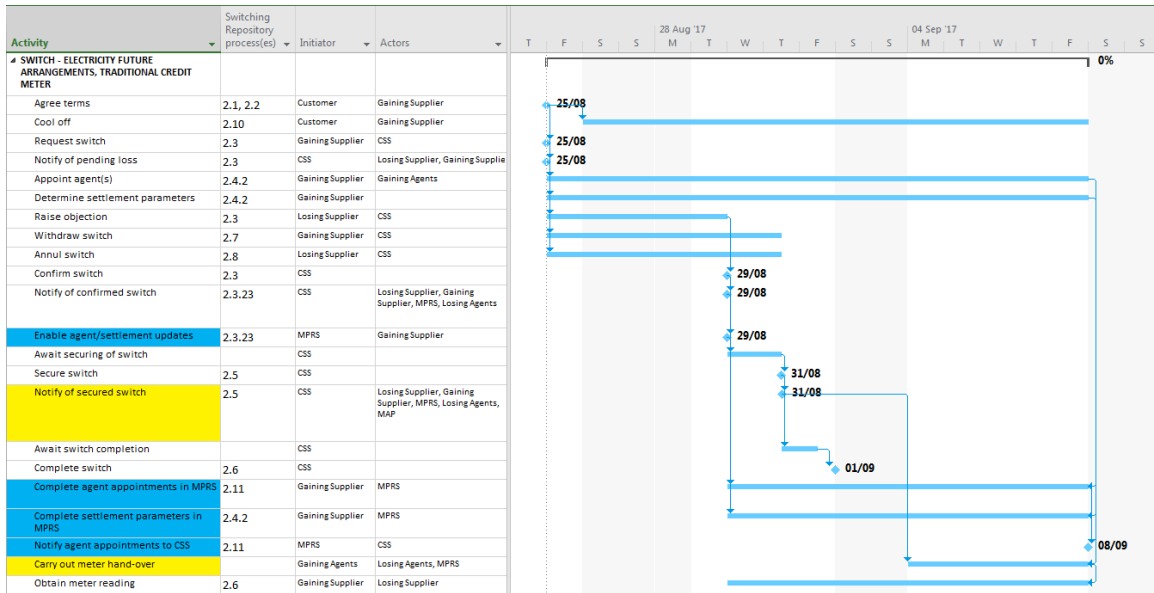


Figure 8 Switch - Electricity Future Arrangements, Traditional Credit Meter

Switch Traditional Pre-Pay Meter

3.55. The switch of a traditional pre-pay meter follows the same process as that for a traditional credit meter, with one additional activity. **Send new access credentials to consumer** is dependent on the completion of Confirm switch; it must be completed before Secure switch.

1. **Send new access credentials 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.

3.57. Notifications are additionally sent to the DSP. The meter hand-over and process for obtaining meter readings are different. There is an additional activity: **Prepare for meter hand-over**.

1. **Notify of confirmed switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
2. **Notify of secured switch** – As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
3. **Prepare for meter hand-over** – Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to the DSP. 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.
4. **Carry out meter hand-over** –The SR placing the gaining supplier's security credentials on the meter is executed. Meter technical details may be updated in MPRS.
5. **Obtain meter reading** – The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). The DSP 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.

Switch DCC-Enrolled Pre-Pay Meter

3.58. The switch of a DCC-enrolled pre-pay meter generally follows the same process as that for a traditional credit meter, with a few differences, as described below. Note that there is no need to send physical credentials through the post, as there is for a traditional pre-pay meter.

3.59. Notifications are additionally sent to the DSP. The meter hand-over and process for obtaining meter readings are different. There are two additional activities: **Prepare for meter hand-over** and **Issue commands for meter hand-over**.

1. **Notify of confirmed switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
2. **Notify of secured switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
3. **Prepare for meter hand-over** - Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to the DSP. 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 pre-pay mode.
4. **Issue commands for meter hand-over** - The pre-pay meter is changed to credit mode by the losing supplier.
5. **Carry out meter hand-over** -The SR placing the gaining supplier's security credentials on the meter is executed. Meter technical details may be updated in MPRS.
6. **Obtain meter reading** - The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). The DSP 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

3.60. The different basic business scenarios for a successful switch in gas (as in electricity) are:

- Traditional credit meter;
- Traditional pre-pay meter;
- DCC-enrolled credit meter;
- DCC-enrolled pre-pay meter;
- Initial registration and creation of an RMP;
- Termination of an RMP; and
- Out-of-switch-cycle updates (for example, to agents).

3.61. Each of the first four follows a similar pattern. The traditional credit meter switch is described in detail and serves as a model for the others. For the following three scenarios, only the differences from the traditional credit meter are given. The last three are described in the *Functionality Common to both Electricity and Gas* section.

Summary of Switch Business scenarios

3.62. The activities relevant to each scenario are summarised in the following table.

Activity Ref	Activity	Gas				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
1	Agree terms	✓	✓	✓	✓	The same for all scenarios.
2	Cool off	✓	✓	✓	✓	The same for all scenarios.
3	Request switch	✓	✓	✓	✓	The same for all scenarios.
4	Notify of pending loss	✓	✓	✓	✓	The same for all scenarios.
5	Appoint agent(s)	✓	✓	✓	✓	The same for all scenarios.
6	Determine Settlement Parameters	✓	✓	✓	✓	The same for all scenarios.

Activity Ref	Activity	Gas				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
7	Raise objection	✓	✓	✓	✓	The same for all scenarios.
8	Withdraw switch	✓	✓	✓	✓	The same for all scenarios.
9	Annul switch	✓	✓	✓	✓	The same for all scenarios.
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 new access credentials to consumer	x	✓	x	x	This activity is only relevant to traditional pre-pay 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 DSP.
19	Prepare for meter hand-over	x	x	✓	✓	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	x	x	x	✓	This activity is only relevant to DCC-enrolled pre-pay meters; the losing supplier places the

Activity Ref	Activity	Gas				NOTES
		traditional meter		DCC-enrolled meter		
		credit	pre-pay	credit	pre-pay	
						meter in credit mode, 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	x	x	✓	✓	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

3.63. The table 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	Consumer	Gaining Supplier
3	Request switch	1	Gaining Supplier	CSS
4	Notify of pending loss	3	CSS	Losing Supplier, Losing Shipper, Gaining Supplier, Gaining Shipper, DES
5	Appoint agent(s)	1	Gaining Supplier	Gaining Agent(s)
6	Determine settlement parameters	1		
7	Raise objection	4	Losing Supplier	CSS

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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, DSP
12	Enable agent / settlement updates in UK Link	11	UK Link	Gaining Shipper
13	Send new access credentials to consumer	11	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, DSP
17	Prepare for meter hand-over	11	Gaining Supplier	DSP
18	Issue commands for meter hand-over	16	Losing Supplier	DSP
19	Await switch completion	15	CSS	
20	Complete switch	17,18	CSS	
21	Complete agent appointments in UK Link	5FF,11	Gaining Supplier	Gaining Shipper, UK Link
22	Complete settlement parameters in UK Link	5FF,11	Gaining Shipper	UK Link
23	Notify agent appointments to CSS	21	UK Link	CSS
24	Carry out meter hand-over	5FF,16 (Traditional) 20 (DCC enrolled)	Gaining Agents(s) or Gaining Supplier	Losing Agents(s), UK Link or DSP

25	Obtain meter reading	24FF	Gaining Agents(s) or Gaining Supplier	Losing Agents(s) or Losing Supplier Or DSP
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Table 4 Gas Switch dependencies

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

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

3.65. 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 to 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.

3.66. 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 pre-pay meter). If the gaining supplier has not already sent commands to the DSP 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 the DSP, the DSP 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

3.67. 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 SSD is initially expected to be around 5 working days in the future. 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 can 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** – The 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 stay with the new supplier.

3. **Request switch** – The gaining supplier sends a switch request to CSS. Once the switch has been validated, it is stored on the system with a status of "validated".
4. **Notify of pending loss** – CSS notifies the losing supplier and losing shipper and losing agent(s) of the pending loss and its effective date; CSS also notifies the gaining supplier, gaining Shipper and DES.
5. **Appoint agent(s)** – The gaining supplier appoints a MAP or MEM. Execution of the switch is not dependent on completion of agent appointment.
6. **Appoint agent(s)** – The gaining supplier appoints a MAP or MEM. Execution of the switch is not dependent on completion of agent appointment.
7. **Determine settlement parameters** – The gaining shipper determines the settlement parameters. Execution of the switch is not dependent on determining the settlement parameters.
8. **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 or debt issues with the consumer. If an objection is raised within the window, then the switch stops.
9. **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.
10. **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.
11. **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.
12. **Notify of confirmed switch** – CSS notifies the losing supplier, losing shipper, losing agent(s) (MAP or MEM) and gaining supplier of the confirmed switch. CSS also notifies the gaining Shipper, UK Link and DES.
13. **Enable agent/settlement updates** – UK Link enables the gaining supplier to enter agent and the gaining shipper to enter 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 batch

run where UK Link applies the changes sent by CSS during that working day

14. **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.
15. **Secure switch** – At 17:00 local time on the calendar day preceding SSD, the switch is made irrevocable and its status changes to “secured”.
16. **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.
17. **Await switch completion** - The period between Secure switch and Complete switch (17:00 to 23:59 on the working day preceding the SSD).
18. **Complete switch** – At 00:00 on the SSD, the switch is completed and the incumbent supplier is changed in CSS.
19. **Complete agent appointments in UK Link** – The gaining supplier sends the new agent details to UK Link by the SSD. If no details are sent, then UK Link carries forward to the gaining supplier the agents associated with the losing supplier.
20. **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 carries forward to the gaining supplier the parameters associated with the losing supplier.
21. **Notify agent appointments to CSS** – UK Link notifies CSS of the new agent details.
22. **Obtain meter reading** – The gaining supplier takes a meter read (through its agent) and passes it to UK Link. 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.

3.68. The switch is illustrated in the following diagram:

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

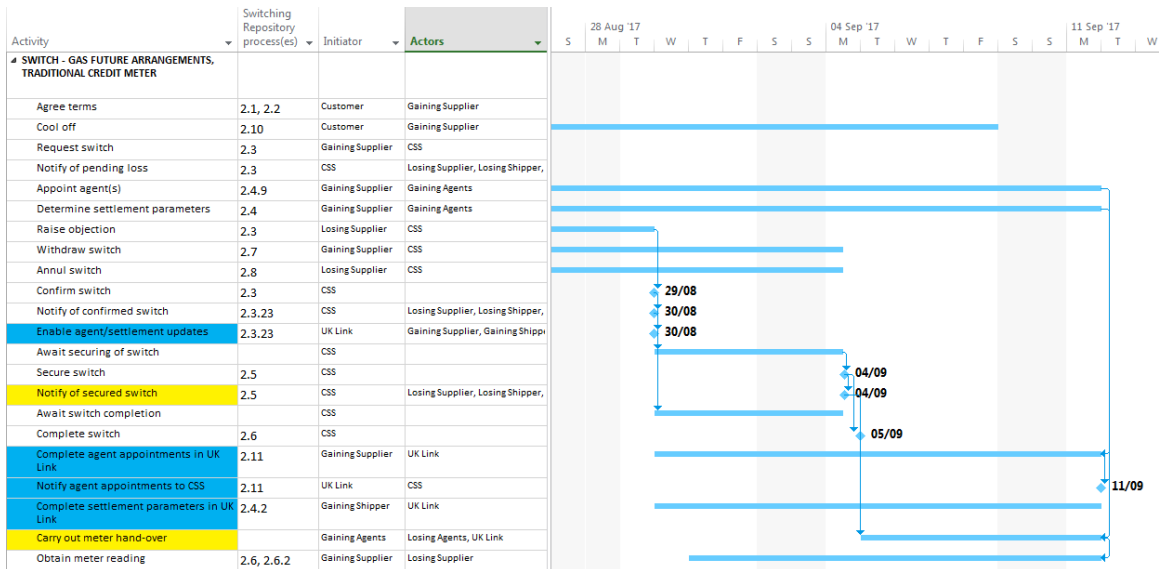


Figure 9 Switch - Gas Future Arrangements, Traditional Credit Meter

Switch Traditional Pre-Pay Meter

3.69. The switch of a traditional pre-pay meter follows the same process as that for a traditional credit meter, with one additional activity. **Send new access credentials to consumer** is dependent on the completion of **Confirm switch**; it must be completed before **Secure switch**.

- 1. Send new access credentials 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

3.70. 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.

3.71. Notifications are additionally sent to the DSP. The meter hand-over and process for obtaining meter readings are different. There is an additional activity: **Prepare for meter hand-over.**

1. **Notify of confirmed switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
2. **Notify of secured switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
3. **Prepare for meter hand-over** - Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to the DSP. 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.
4. **Carry out meter hand-over** - The SR placing the gaining supplier's security credentials on the meter is executed.
5. **Obtain meter reading** - The gaining and losing suppliers both take a meter read (the daily read log for 00:00 on the SSD). The DSP allows both suppliers access to this log. If no read is taken, UK Link estimates the read based on the historical data.

Switch DCC-Enrolled Pre-Pay Meter

3.72. The switch of a DCC-enrolled pre-pay meter generally follows the same process as that for a traditional credit meter, with a few differences, as described below. Note that there is no need to send physical credentials through the post, as there is for a traditional pre-pay meter.

3.73. Notifications are additionally sent to the DSP. The meter hand-over and process for obtaining meter readings are different. There are two additional activities: **Prepare for meter hand-over** and **Issue commands for meter hand-over.**

1. **Notify of confirmed switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
2. **Notify of secured switch** - As for traditional credit meter. In addition, CSS notifies DSP of the secured switch.
3. **Prepare for meter hand-over** - Service Requests (SRs) are prepared and either scheduled within the supplier's system or sent future-dated to the DSP. 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 pre-pay mode.
4. **Issue commands for meter hand-over** - The pre-pay meter is changed to credit mode by the losing supplier.

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). The DSP 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

3.74. If the pre-payment 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.

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

Switch Large Non-Domestic Consumer

3.76. 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 large non-domestic consumer. 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

3.77. 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);
- 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).

3.78. 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 pre-pay meter, if new access

credentials have already been sent out to the consumer, then these will need to be disabled by the gaining supplier.

Cool Off

3.79. A consumer may exercise his 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.

3.80. 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.

3.81. 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 his original supplier). 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

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

- The losing supplier annulling the switch if it has not yet been secured; or
- The losing supplier submitting a new switch request if the switch has been secured.

3.83. This is a 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).

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

3.85. As this is a new Switch Request, there is no dedicated process for this. 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 for further details on the switch request submission process.

Initiate Registrable Measurement Point

3.86. In Electricity, Distribution Network Operators (DNOs) set up Registrable Measurement Points (RMP). This may either consist of a physical connection to the point of where energy will be traded (imported or exported) or by adding on an

additional measurement of energy on an existing connection. This will be reflected in MPRS and in turn, in CSS.

3.87. In Gas, Gas Transporters (GTs) set up 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. This will be reflected in UK Link and in turn, CSS.

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

3.89. Refer to Process [1.2 Create RMP](#) in the Switching Design Repository

Initial Registration of Registrable Measurement Point

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

3.91. There is no time bound limit on the process other than the maximum time that this can take is 28 days where the request is sent 28 days prior to the effective from date.

3.92. Refer to Process [1.4 Initial Registration](#) in the Switching Design Repository.

Terminate Registrable Measurement Point

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

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

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

3.96. 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.

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

3.98. Refer to Process [3.1 Terminate RMP](#) in the Switching Design Repository.

Update Registrable Measurement Point Details

3.99. 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)
- Meter Equipment Manager (MEM)
- Data Controller (DC)
- Data Aggregator (DA)
- Domestic / non-domestic indicator
- Meter Point Location
- Related RMP set-up and management
- Shipper
- New asset details (note that MPRS and UK Link are also updated by Smart Metering when a meter has been installed or removed).

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

- Created
- Operational
- Dormant
- Terminated.

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

3.102. 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.

Supplier challenge of a BLPU address link

3.103. If a RMP has been linked to a Basic Land and Property Unit (BLPU – the British Standard representation of an area of land) 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.

3.104. Refer to Process [2.18 Process Supplier incorrect address challenge](#) in the Switching Design Repository.

BLPU address updates

3.105. If there are one or more RMPs linked to a BLPU address, any updates to those BLPU addresses from the provider of that data will be updated in the system and reflected in the relevant enquiry system (ECOES and DES).

3.106. Refer to Process [2.16 Process BLPU update](#) in the Switching Design Repository.

Meter Point Location updates

3.107. Where a Network (DNO / GT) updates the address of a Meter Point (Meter Point Location) and that address was previously linked to a BLPU, if update to the address is significantly different to key properties of the BLPU, the system shall accept the update but flag the discrepancy up for a Service Management investigation.

3.108. Refer to Process [2.14 Update RMP](#) in the Switching Design Repository.

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
BLPU	Basic Land and Property Unit
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 and Electricity being supplied to/exported from the same location
E2E	End-to-End
IXN, IXNetwork	Network over which gas data flows are transmitted between suppliers, shippers, agents and UK Link.
MIS	Market Intelligence Service
MPAS	Meter Point Administration Service
MPRS	Meter Point Registration 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
Pre-pay	A mode of payment collection where the consumer pays up front for a set amount of energy
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 (sometimes UKLink)	Systems that support the competitive gas market, commercial balancing of the gas network, and transportation and energy charging to shippers, operated by Xoserve.

