

TBDG Design Note

Document Title:	Management of ALCS
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Purpose of Paper*	<u>FOR INFORMATION</u>	FOR COMMENT	FOR DECISION
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Summary of Document Purpose	To describe the features of the smart metering solution that suppliers and others will employ when managing ALCS (including at change of supplier)		
Submitted By	Colin Sawyer, DECC	Meeting Date	DD/MM/YYYY
Document Status*	FIRST DRAFT	FOR INTERNAL REVIEW	TBDG DRAFT
			RELEASED

*Delete as appropriate

Approval				
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1.1	Updated to include revised introductory text	Adam Dudzinski	BEIS	19/04/2017

Introduction

Summary of action required from TBDG

1. TBDG is invited to recommend that this Design Note is released to stakeholders.
2. TBDG is invited to note that Ofgem, ELEXON and the DCUSA Panel are taking forward work to determine whether new regulatory arrangements are required in relation to setting switching times for ALCS. This work will consider the arrangements to be applied when the Radio Teleswitch (RTS) system is decommissioned.

Identification of the issue

3. This Design Note describes how various issues relating to the management of Auxiliary Load Control Switches (ALCS)². The issues addressed are:
 - How can DCC Users identify the presence and configuration of ALCS at a consumer premise?
 - How can gaining suppliers ensure that a consumer's switched loads are not inadvertently disrupted at Change of Supplier (CoS)?
 - How will suppliers determine the switching times for ALCS?
4. This Design Note does not address issues relating to the ways in which ALCS may need to be managed in the medium to longer-term either to support RTS replacement or new demand side management initiatives.

Background and Context

5. ALCS are operated today using time switches or under the RTS arrangements. Typically they are installed in conjunction with space / water heating, usually in conjunction with an Economy 7/10 tariff. In some cases the consumer has a twin element meter to allow different prices to be applied to the switched and non-switched loads.
6. Currently, there is no guarantee that a prospective supplier³ (i.e. one attempting to sign-up a new customer) will know that the customer has ALCS in operation, although they generally ask for information from the customer as part of the process of setting the tariff. In addition the prospective supplier can retrieve the Standard Settlement Configuration (SSC) from ECOES and this can be used to indicate the presence of load control. Post-CoS the registered supplier receives meter technical details and other information via the DTC Flow 150 (Meter Technical Details – see Appendix 1): this includes:
 - Manufacturer and model
 - Meter Serial Number (MSN)
 - Auxiliary Load Control / switching regime (teleswitch or clock)

² ALCS may be internal to smart electricity meters (Part D of the ESME specification in SMETS2) or HAN-connected to an ESME (i.e. HCALCS - Section 8 of SMETS2). In this Design Note both internal and HCALCS are generically referred to as ALCS, except where features are specific to internal or HAN-connected ALCS.

³ All references to 'supplier' are to the Electricity Import Supplier

- Standard Settlement Configuration (SSC) code⁴
7. Suppliers have commented that the age of existing equipment (often over 20yrs) and the quality of existing data capture processes have combined to create a situation in which existing information on load control devices is often unreliable.
 8. For ALCS operated under the RTS regime each relevant metering point is assigned to a Load Managed Area / RTS Group. RTS Groups may be static or dynamic and switching times are specified so as to balance load across distribution and transmission grids and to avoid high ramp-up/down to generation. Both static and dynamic groups may be updated over-the-air using the RTS broadcast system. The switching calendar for a dynamic group may be updated more regularly, for example to modify actual switching times within a published time window on a day-ahead (e.g. for weather –related tariffs) or ad hoc basis. A file of actual switching times is sent from the RTS Agent to ELEXON as input to settlement.
 9. The RTS arrangements are very stable. Few new RTS devices are installed and there is little movement of metering points between RTS groups. As a consequence there is currently minimal risk that a consumer’s switching times will be inadvertently changed at CoS.

Smart Metering Design Approach

How can users identify ALCS arrangements

10. The DCC services will provide Users with access to a range of data on the smart metering system / configuration in a consumer’s premises. These services are in addition to information that will continue to be available from legacy systems.
11. The relevant DCC services will be delivered through the DCC Self-Service Interface (SSI) and the DCC User Gateway. Eligibility to receive DCC User Gateway services will depend on the User’s Role and it should be noted that SEC obligations vary according to User Role (e.g. the consumer’s permission is required before an Other User can retrieve consumption data).
12. The SSI will provide access to information held on the DCC’s Smart Meter Inventory, using a range of access methods (i.e. MPAN, Device ID, postcode, UPRN). All users will have access to the SSI⁵ and be able to determine:
 - The meter model and firmware version
 - The number of internal ALCS
 - The number of HCALCS associated with the meter
13. Having detected the presence of ALCS, Users may submit service requests across the DCC User Gateway to retrieve configuration data from the smart meter and/or HCALCS. Information that may be retrieved by Suppliers, Electricity Network Operators and Other Users includes:
 - The ALCS description – a code describing the type of load attached to the switch (the code will be assigned by the registered supplier, typically at installation)

⁴ Some of these details (MSN and SSC) are also available from ECOES. Market Domain Data (MDD) can be used to determine whether an SSC is clock or tele-switched.

⁵ Currently access to the SSI is via a web browser although DCC is considering a change request to add an M2M interface.

- The calendar for each ALCS
 - Whether each ALCS has a boost button configured
14. Additionally, Suppliers and Other Users will be able to retrieve tariff settings from the meter (Tariff Block Price Matrix, Tariff Switching Table, Tariff Threshold Matrix, Tariff Time of Use Matrix and Tariff Type).
15. Where a supplier is the Registered Supplier they will be able to access the details referred to in 13 and 14 using their supplier Role Code.
16. Other SEC parties (e.g. switching sites) and suppliers operating as Other Users (i.e. when undertaking sales and marketing activities or prior to becoming the registered supplier) may also need access to the details referred to in 13 and 14 above (e.g. to prepare quotations or prepare for CoS). Other Users will need to comply with SEC provisions with regard to securing Appropriate Permission from the consumer before retrieving Consumption Data⁶.
17. In addition to these ‘electronic’ sources of information, it is assumed that suppliers will engage with prospective customers to ensure that their requirements for a remotely-switched load(s) will continue beyond CoS. This dialogue will also provide the basis for agreeing the most appropriate tariff for the customer and/or whether there is a need to change ALCS switching times (and the SSC).
18. There is a possibility that legacy load control devices (time switches or RTS devices) could be left in place after a smart meter (SMETS 1 or 2) has been installed. This ‘hybrid’ situation would be difficult for a prospective supplier to detect from industry or DCC data sources. Suppliers have indicated that such ‘hybrid’ installations would run counter to the objectives of smart metering and that a range of commercial and operational (e.g. safety) drivers should deter suppliers from installing them.

Management of ALCS at CoS

19. With a few exceptions⁷ Configuration Data (as defined in SMETS2) can only be updated by the supplier whose security credentials are held on the meter (i.e. the registered supplier).
20. At CoS the gaining supplier will send an Update Security Credentials service request to DCC. DCC will validate the request against its registration data to ensure that the supplier is the current (or pending⁸) registered supplier. If the service request is valid, it will be processed by DCC and the gaining supplier’s security credentials (plus related data such as supplier name) will be updated in the meter’s configuration data. From this point the gaining – now registered – supplier can update the configuration data.
21. SEC places no obligations on losing suppliers. Indeed, as it is up to the gaining supplier to initiate the Update Security Credentials request, it would be difficult for the losing supplier to synchronise their actions with those of the gaining supplier (i.e. there is no guarantee that the

⁶ Consumption Data is defined as “the quantity of electricity or gas measured by the meter” so it is arguable that permission is not required to access the ALCS data. Users may however develop their own Customer Charter procedures covering the retrieval of such data.

⁷ The exceptions comprise Network Operators threshold configurations and other parties’ Security Credentials,

⁸ If registration is pending the Update Security Credentials command can only be executed after Supply Start Date (SSD).

gaining supplier will submit the Update Security Credentials to coincide with SSD). The losing supplier will however receive an alert from the meter to show that their security credentials have been replaced.

22. At the time that the security credentials are updated on the meter, all other configuration settings will remain as they were prior to CoS. Immediately following the Update Security Credentials request, it is expected that the gaining supplier will submit service requests to make whatever configuration changes they require. These are likely to include updates to tariff details and – where relevant – to prepayment parameters such as emergency credit terms. However, unless the gaining supplier issues service requests to update them, the configuration data items held by the meter – including the ALCS calendar – will remain as they were prior to CoS.
23. In addition to the configuration data held on the meter, suppliers may also retrieve data such as Network Operator and Standard Settlement Configuration from the registration service (i.e. MPAS).
24. The conclusion of this discussion is that ALCS settings will only be changed at CoS if a supplier (the losing supplier prior to SSD or the gaining supplier thereafter) explicitly raises a service request to change them. Assuming that the suppliers do not wilfully alter the settings, the ALCS will operate unchanged through CoS .
25. Leaving the ALCS switching times unchanged at CoS will be sufficient for MPANs assigned to SSCs which are designated as ‘clock switched’ or ‘RTS static’⁹. However MPANs which are assigned to ‘RTS dynamic’ SSCs – which are specific to a supplier - prior to CoS will need to have their switching times set in accordance with the arrangements set out below.

Determining switching times for ALCS

26. The smart metering solution provides tools to allow individual loads (generally identified with individual circuits within the premise) to be switched according to a calendar or by ad hoc switching commands. Calendar updates and ad hoc commands are initiated by the supplier to that premise.
27. The regulatory arrangements for setting switching times are outside the scope of SMIP and are set out in documents including:
 - The Balancing and Settlement Code (BSC) which defines how switched loads are treated in settlement
 - The Distribution Connection and Use of System Agreement (DCUSA), between DNOs and suppliers, which defines responsibilities for setting switching regimes
 - The RTS Agreement which defines the responsibilities of the RTS service operator
28. For RTS devices, a sponsoring supplier sets the switching regime for each Load Managed Area / RTS Group in conjunction with the relevant DNO. The sponsoring supplier determines which

⁹ Switching times are controlled by the RTS Access Provider, so only the RTS Access Provider knows whether switching is static or dynamic. This information was previously published via ENA Quarterly Reports. An update to these reports may be needed to confirm static SSCs, such that Suppliers could either leave the relevant meters on their existing SSCs (and set the ALCS calendar accordingly) or assign the meter to an equivalent time-switched SSC.

metering points should fall into each group and SSC. SSCs are used in settlement processes to profile suppliers' load in accordance with the switching calendars of their metering points.

29. The existing arrangements require suppliers to set up new SSCs for all new types of metering (e.g. smart meters) and groups of ALCS that will follow the same switching regime. Suppliers need to agree these switching regimes with DNOs. However, whereas switching regimes for RTS controlled SSCs are sent directly from the RTS Agent to ELEXON, there is no existing mechanism for suppliers to submit switching regimes for the SSC's of smart metering ALCS.
30. In the ALCS workshop on 20 March 2013, Ofgem agreed to consider the procedures for determining and submitting the switching times applied to ALCS. Suppliers and DNOs expressed interest in supporting these initiatives. This work is being taken forward by Ofgem with the relevant support from industry. In parallel, ELEXON is reviewing the implications for settlement of RTS being superseded by ALCS and a modification is being considered to DCUSA which will also address the setting of the Randomised Offset Limit¹⁰.
31. The requirement to set the ALCS calendar will arise when an ALCS is installed. The key requirement is for the ALCS calendar to be aligned with the SSC. In most cases this should mean that the ALCS replicates the existing timing device. However, this may not be the case if the clock in the legacy timing device had drifted from correct time and suppliers may need to advise customers of this risk.
32. As in the CoS situation discussed in paragraph 17, it is assumed that suppliers will engage with customers during the installation process to confirm that they have a continuing need for a remotely switched load(s) and that an ALCS is required. This may lead to a need for the supplier to change the SSC.
33. For 'RTS-dynamic' sites a new approach will be required so the supplier can operate the ALCS in a way which mimics the RTS switching process (including providing dynamic switching times to settlement). Unless such metering points are switched to half-hourly settlement, there is no obvious solution to this issue. Accordingly the work referred to in paragraph 30 will need to provide a solution before 'RTS-Dynamic' teleswitches are replaced.

¹⁰ See SMETS2 Configuration Data (5.7.4.34 in Ver 1.4)

Appendix I. DTC D150 Flow

Flow Name:	Non Half-hourly Meter Technical Details
Flow Description:	Meter technical details for Non Half-hourly..
Flow Ownership:	MRA

From	To	Version
Distributor	MOP	3.1
MOP	Distributor	2.0
MOP	MOP	2.0
MOP	NHHDC	2.0
MOP	Supplier	2.0

Data Items:

Reference	Item Name
J0476	Associated Meter Id
J0477	Associated Meter Register Id
J0462	Certification Date
J0463	Certification Expiry Date
J0382	Channel Number
J0385	Communications Address
J0386	Communications Method
J0454	CT Ratio
J0848	Date of Meter Installation
J1269	Date of Meter Removal
J1254	Effective from Settlement Date {MSMTD}
J1268	Effective From Settlement Date {MSNSFC}
J0300	Effective from Settlement Date {SCON}
J0080	Energisation Status
J0408	Main/Check Indicator
J0480	Maintenance Date
J0410	Manufacturers Make & Type
J0082	Measurement Class Id
J0103	Measurement Quantity Id
J1677	Meter Asset Provider Id
J0418	Meter COP
J0461	Meter COP Dispensation
J0501	Meter Current Rating
J0004	Meter Id (Serial Number)
J0419	Meter Location
J0010	Meter Register Id
J0475	Meter Register Multiplier
J0474	Meter Register Type
J0483	Meter Type
J1267	Metering System Non Settlement Functionality Code
J0003	MPAN Core
J0008	Nature of Maintenance
J0478	Number of Register Digits
J0465	Outstation COP
J0467	Outstation COP Dispensation
J0468	Outstation Encryption Key
J0469	Outstation Number of Channels
J0470	Outstation Password Level 1
J0464	Outstation PIN
J0471	Outstation Type

Reference	Item Name
J0432	Pulse Multiplier
J0098	Retrieval Method
J0722	Retrieval Method Effective Date
J0076	Standard Settlement Configuration Id
J0134	Tele-Switch/Clock Indicator
J0716	Timing Device Id (Serial Number)
J0455	VT Ratio