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MP184

‘Increase Smart capability of SMETS2 Twin Element ESME to support solar and storage use cases’

Modification Report

Version 0.4

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Corporate member of
Plain English Campaign
Committed to clearer
communication

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About this document

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

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This document also has two annexes:

- **Annex A** contains the business requirements for the proposed solution.
- **Annex B** contains the DCC Preliminary Assessment.

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1. Summary

This proposal has been raised by Tom Woolley of SMS PLC.

The Smart Technical Equipment Technical Specifications (SMETS) currently defines how a Twin Element Electricity Smart Metering Equipment (ESME) captures and records electricity consumption on a per element basis. The Proposer would like to enable Twin Element meters to record exported energy on the secondary element to allow innovative use cases.

2. Issue

What are the current arrangements?

Currently, the SMETS2 defines how a twin element ESME captures and records electricity consumption on a per element basis. The twin element ESME measures and records the energy imported and exported on the primary measurement element, whereas the secondary measuring element records imported energy but is not mandated to record export active energy consumption.

To support greater energy efficiency and cost saving the Proposer would like to offer products and services that require export registers on the secondary element. This would enable the Smart Energy industry to support innovative products and services for management of battery storage and solar solutions, independently from the supply via the primary element.

What is the issue?

Currently, SMETS2 is fit for purpose when considering traditional requirements for twin element metering. The issue is the current specification is preventing innovations and alternative markets from using SMETS2 as a solution, due to the current limitations. By making these proposed changes, that will not require hardware changes to existing SMETS2 twin element meters in the market, SMETS2 and the DCC Ecosystem can be used more widely. To enable this innovation and use of SMETS2 for such products and services, this modification is proposing: -

- Support for Active Export kilowatt-hour (kWh) register on the secondary element.
- Support for four Time of Use's (TOU) to support Active Export kWh on the secondary element.
- Support for an additional load profile channel specifically for the Active Export kWh on the secondary element.
- Support for an Export Meter Point Administration Number (MPAN) on the secondary element.

The current SMETS2 specification focuses on traditional twin element legacy installations and does not consider added value propositions. The current limitations on SMETS2 twin element restricts the industry in developing innovative ways in utilising the secondary element on twin element meters. These limitations prevent the industry from creating innovative products and offering cost effective tariffs to consumers.

Impact on consumers

The Proposed Solution will allow Export Data to be recorded on the secondary element of a Twin Element Meter. This would provide the consumer with the flexibility to use both elements rather than being restricted to the primary.

3. Solution

Proposed Solution

To allow Export Data to be collected from the secondary element of a Twin Element ESME, DCC will implement new or updated DUIS Service Requests and GBCS Use Cases to support:

- An active Export Register on the Secondary Element
- Four Time of Use (TOU) tariffs for Active Export on the secondary element
- Profile Data Log for the Active Export Register on the secondary element
- Setting and reading of an Export MPAN on the ESME Device for the secondary element
- Setting and reading of an Export MPAN within the Smart Metering Inventory for the secondary element.

Further detail about the Proposed Solution can be found in the Preliminary Assessment in Annex B.

4. Impacts

This section summarises the impacts that would arise from the implementation of this modification.

SEC Parties

SEC Party Categories impacted			
	Large Suppliers		Small Suppliers
	Electricity Network Operators		Gas Network Operators
✓	Other SEC Parties	✓	DCC

Breakdown of Other SEC Party types impacted			
	Shared Resource Providers	✓	Meter Installers
✓	Device Manufacturers		Flexibility Providers
	DCC Other Users		MAPs/ MAMs

DCC Systems

DCC System changes

The full impacts on DCC Systems and DCC's proposed testing approach can be found in the DCC Preliminary Assessment response in Annex B.

DCC System traffic

There will be no impact on DCC system traffic.

SEC and subsidiary documents

The following parts of the SEC will be impacted:

- Appendix AD – DCC User Interface Specification (DUIS)
- Appendix AF – Message Mapping Catalogue (MMC)
- Schedule 8 – GB Companion Specification (GBCS)

Devices

Devices impacted			
✓	Electricity Smart Metering Equipment		Gas Smart Metering Equipment
	Communications Hubs		Gas Proxy Functions
	In-Home Displays		Prepayment Meter Interface Devices
	Standalone Auxiliary Proportional Controllers		Home Area Network Connected Auxiliary Load Control Switches
	Consumer Access Devices		Alternative Home Area Network Devices

Consumers

The Proposed Solution will allow Export Data to be recorded on the secondary element of a Twin Element Meter. This would provide the consumer with the flexibility to use both elements rather than being restricted to the primary.

Other industry Codes

SECAS are working with the REC to determine the changes resulting from this modification.

Greenhouse gas emissions

This modification has a neutral impact on greenhouse gas emissions.

5. Costs

DCC costs

The estimated DCC implementation costs to implement this modification is £250,000 to £450,000. The breakdown of these costs are as follows:

Breakdown of DCC implementation costs	
Activity	Cost
Design, Build and Pre-Integration Testing (PIT)	£250,000 to £450,000
Systems Integration Testing (SIT)	TBC
User Integration Testing (UIT)	TBC
Implement to Live	TBC
Application Support	TBC

The range of charges includes provision for DUIS uplift however this will reduce in the event that the targeted SEC release date includes another change or modification with a DUIS uplift as the costs would be shared equally between the two (or more) changes.

Although not included in the detail of the Preliminary Assessment, DCC expects that there will be high integration testing costs associated with this Modification. As with the DUIS uplift these costs will reduce in the event that the targeted SEC release date includes another change or modification with regression testing as the costs would be shared equally between the two (or more) changes.

Based on the existing requirements, the total fixed price cost for a Full Impact Assessment is £22,684 and would be expected to be completed in 40 working days.

More information can be found in the DCC Preliminary Assessment response in Annex B.

SECAS costs

The estimated SECAS implementation cost to implement this as a stand-alone modification is 1 day of effort, amounting to approximately £600. This cost will be reassessed when combining this modification in a scheduled SEC Release. The activities needed to be undertaken for this are:

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

SEC Party costs

This Modification seeks to introduce new Service Requests and associated GBCS Use Cases through changes in the DSP. It will also be necessary to implement changes in the Great Britain Companion Specification (GBCS) at a Device level. This would result in costs for Manufacturers. SECAS will seek information from Manufacturers regarding these costs during the Request for Information.

6. Assessment of the proposal

Observations on the issue

Views of the Change Sub-Committee

SECAS presented the original version of the Draft Proposal to the Change Sub-Committee (CSC) at the September 2021 meeting. A CSC member suggested the issue as originally described was not reflective for what a Twin Element ESME does. The Proposer provided a background to the issue and clarified the use case and ask of the proposal and highlighted it is proposing for innovative products and services to be made available on the secondary measurement element.

A CSC member noted SECAS's view that this modification could work in parallel with [MP152 'Consumption on Smart Polyphase Electricity Meters'](#). MP152 sought to address limitations and restrictions around polyphase meters and capture consumption of energy data via across the three phases instead of a combined data consumption. MP152 was withdrawn by the Proposer in November 2022 as they were unable to commit to the modification process.

Views of the DCC Interaction IT Group (DIG)

Following feedback from the TABASC that this modification could have impacts on Network Parties, SECAS presented MP184 to the DIG in August 2023.

The DIG noted that they currently process import and export readings from the primary element of a Twin Element ESME, noting that they believed this would be possible on the secondary element and on the Smart Metering Inventory (SMI).

Members questioned what impact this modification would have on SRV 8.2 'Read Inventory'. They noted that one business requirement as part of this modification would allow an export MPAN on the secondary element and an additional load profile channel specifically for Active Export on the secondary element. They noted that more information would be returned in the SRV and the potential that this could interrupt their DCC Adapter.

Members also questioned whether a new Service Request or DUIS uplift would be required if the additional information from the export on the secondary elements was included.

Members noted the Proposers reasoning for raising the modification, noting that they believed the modification should be built around the needs of Consumers rather than the Proposer. SECAS noted these comments but reiterated that the Proposer has the ultimate decision-making power and decides the direction of the modification.

Solution development

Impact on the In-Home Display (IHD)

During the Working Group meeting a member questioned if the IHD could display data per-element or cumulatively. The Proposer noted that the IHD can currently show import and export data and therefore export data from the secondary element would be visible to the consumer. Other members noted that further investigation should take place into the existing technology and what would need to be developed for this information to be displayed. They also questioned the extent to which further functionality could be added to the IHD without impacting its performance.

How many MPAN's would be required?

This modification would require four MPAN's registered to one meter. A Working Group member noted that this would require substantial changes to existing processes, have cross-code impacts and would be an expensive alteration to the current arrangements. The Proposer acknowledged this, but highlighted that there are large costs associated with having two meters on site to allow Consumers to export energy on two circuits.

How many Suppliers could be linked to the Twin Element ESME?

There is a GBCS constraint which means that the Primary Import MPAN and Secondary Import MPAN must both be associated with the same Import Supplier. This is because the ESME only has one Trust Anchor Cell for a Supplier certificate. As such, this modification does not allow a different Party on each of the four MPANs. This constraint is currently enforced by DUIS on the SR8.11 validation when those MPANs are declared at I&C.

Implications of additional MPANs

At the Working Group and TABASC meetings members questioned what the implications of more than one import MPAN providing data to the DCC at once. They also queried if the additional MPAN would complicate the existing process within the DCC System. Additionally, members asked what would occur if the Import and Export Suppliers were different on each MPAN and what ramifications this could have for calculating export readings.

Use Cases

The TABASC provided extensive feedback about how the changes proposed in this modification would benefit SEC Parties, in particular the fact that an additional export MPAN needs to be applied to the secondary element. They also questioned why the Proposer considers existing metering arrangements to be insufficient. SECAS has worked with the Proposer to clarify that they wish to install a solar system on an Energy Consumers property and protect themselves from risk of default as all generation would be used as export, rather than being used within the property.

Appendix 1: Glossary

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

Glossary	
Acronym	Full term
CSC	Change Sub-Committee
DCC	Data Communications Company
ESME	Electricity Smart Metering Equipment
EV	Electric Vehicles
IHD	In-Home Display

Glossary	
Acronym	Full term
kWh	Kilowatt-Hour
MPAN	Meter Point Administration Number
PPA	Power Purchase Agreement
RFI	Request for Information
SEC	Smart Energy Code
SMETS2	Smart Technical Equipment Technical Specifications 2
SMI	Smart Metering Inventory
SVT	Standard Variable Tariff
TOU	Time of Use