SEC
Smart Energy Code

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Smart Energy Code

# MP085

# ‘Synchronisation of smart meter voltage measurement periods’

## Modification Report

### Version 0.1

## 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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# 1. Summary

Electricity Network Parties believed that during the development of the smart meter technical specification, the average Root Mean Square (RMS) voltage readings from smart meters would be measured across a consistent period. An example of this would be for an average to be made across a 30 minute period starting on the hour and on the half hour, matching half hour consumption profile data. This is not currently codified in the Smart Metering Equipment Technical Specifications (SMETS) or the Great Britain Companion Specification (GBCS).

There are examples where electricity meter manufacturers' meters work in this way, however this is not uniform across the industry. This results in Electricity Network Parties (i) making conservative, less efficient analysis assumptions to account for the lack of data alignment or (ii) recreating synchronised data by downloading high granularity (for example minute resolution) data and calculating the required data.

This proposal is currently in the Refinement Process where the proposed solution is being developed.

This proposal has been raised by Alan Creighton from Northern Powergrid.

# 2. Issue

## What are the current arrangements?

### What is average RMS voltage and what is it used for?

The RMS voltage value of an Alternating Current circuit represents an equivalent voltage of a Direct Current circuit. Electricity Network Parties use smart meter average RMS voltage and average consumption data to monitor the performance of distribution networks and identify any problems.

Once there is data available in reasonable quantities from smart meters Electricity Network Parties plan to use this data to develop the most efficient solution to any identified problem. The uptake in Low Carbon Technologies, particularly Electric Vehicles and Distributed Generation is expected to cause an increase in the number of power flow and voltage issues in distribution networks. Voltage and consumption data from smart meters will help manage these issues efficiently in the future.

## What is the issue?

The expectation of Electricity Network Parties during the development of the smart meter technical specification was that the average RMS voltage readings from smart meters would be measured across a consistent period. For example with the default being for an average to be made across a 30 minute period starting on the hour and on the half hour as per the half hour consumption profile data. This is not an explicit requirement codified in the SMETS or the GBCS.

Whilst some electricity meter manufacturers' meters work in this way, other manufacturers' meters do not. Without voltage measurements being made in a consistent way, Electricity Network Parties must either (i) make conservative, less efficient analysis assumptions to account for the lack of data alignment or (ii) recreate synchronised data by downloading high granularity (for example minute resolution) data and calculating the required data.

## What is the impact this is having?

Average RMS voltage readings that relate to random 30-minute periods are helpful for identifying voltage problems at an individual customer premises. However, without synchronised recording times it will be difficult to:

- understand voltage issues on Low Voltage feeders that may be affecting more than one customer;
- identify trends or forecast future voltage issues; or
- validate power flows and voltages on a network model relating to a defined 30-minute period, and hence identify the most efficient solution.

There are two headline implications if this issue is not addressed:

- Electricity Network Parties will either need to make conservative assumptions about network voltages which may lead to inefficient solutions being implemented; or

- Electricity Network Parties will need to reconfigure the average RMS voltage measurement period from the default period of 30 minutes to one minute and download the high granularity data so that they can recreate synchronised data in their own systems. This will increase the voltage related traffic on the DCC infrastructure by a factor of 30 and require Electricity Network Parties to develop systems to manage a greater volume of data than originally envisaged. This is not considered to be an efficient solution.

The Proposer has stated that there will need to be amendments to SMETS (SEC Schedule 9) and GBCS (SEC Schedule 8). The issue lies with the requirements for specifying the timings when the RMS voltage readings take place. Currently it is not stipulated in either document.

# 3. Assessment of the proposal

## Observations on the issue

The proposal was initially taken to the Change Sub-Committee (CSC) for initial discussion. A CSC member pointed out that there were some synchronisation issues as a whole and it would be beneficial to look at all synchronisation issues together to explore any efficiencies in a solution to a number of problems. Another member pointed out that these would have been discussed at Technical Specification Issue Resolution Sub-committee (TSIRS). This was discussed with the Proposer and Technical Operations and it was agreed that although a valid concern, it was felt that this was a separate issue to the one defined in this proposal.

During the Development Stage, the proposal was presented to the other SEC Sub-committees to gain feedback on the issue identified. The Technical Architecture and Business Architecture and Sub-Committee (TABASC) showed an interest in the proposal and would like to be kept up to date with its progress. The Operations Group (OPSG) showed an interest in this proposal, however would only like to be kept up to date if the proposal is not approved for implementation. The Security Sub-Committee (SSC) confirmed that there are no security risks with this proposal and they are happy with it to proceed. It will not require further updates.

The Proposal was subsequently taken to the Change Sub-Committee for decision, where it was met with unanimous approval. The CSC approved that the Draft Proposal was to be converted into Modification Proposal enters the Refinement Process.

## Appendix 1: Progression timetable

This modification has now entered the Refinement Process. Solution options have been discussed and will be presented to the SEC Monthly Working Group for discussion and to agree which Solution to progress.

| Timetable | |
|---|---|
| **Action** | **Date** |
| CSC recommendation that Panel convert into a Modification Proposal | 29 Oct 2019 |
| Panel convert Draft Proposal to Modification Proposal | 15 Nov 2019 |
| Discuss potential solution options with the Proposer | Dec 2019 |
| Discuss potential Solution options with Working Group | 4 Mar 2020 |

## Appendix 2: 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 |
| GBCS | Great Britain Companion Specification |
| OPSG | Operations Group |
| RMS | Root Mean Square |
| SEC | Smart Energy Code |
| SECAS | Smart Energy Code Administrator and Secretariat |
| SMETS | Smart Metering Equipment Technical Specifications |
| SSC | Security Sub-Committee |
| TABASC | Technical Architecture and Business Architecture Sub-Committee |
| TSIRS | Technical Specification Issue Resolution Sub-Committee |