

SVA FAULT RESOLUTION

This document outlines the methodology used to assess the Settlement Risk related to fault resolution. We are not seeking to exhaustively outline all aspects considered during this assessment; our aim is to draw out the main data items considered and any key assumptions when estimating a future impact range.

The risk that... A fault with SVA Metering Equipment is not resolved, such that metered data is recorded incorrectly or cannot be retrieved **resulting in...** erroneous or estimated data in Settlement

Category: Metering

Sub category: Fault resolution

Covers: The investigation process and associated timescales following a suspected or identified fault

Estimated impact in 2020/21

HH market	Lower	Middle	Upper
100 kW	£10.9m	£19.4m	£34.9m
Sub 100 kW	£5.3m	£10.4m	£20.9m

Does not cover: Faults that are currently unidentified

Please note: The underlying root cause of the suspected fault will be attributed to a different Settlement Risk. This risk seeks to assess the impact of identified faults not being resolved inside the required timescales. This assessment has focused on the impact in the Half Hourly (HH) market, as there are no BSC service levels for Non-Half Hourly (NHH) Meter investigation requests.

At risk population

As part of this assessment, we seek to understand the population at risk in the upcoming period, i.e. how many times will the underlying process occur where the risk can manifest.

The at risk population for this risk is all identified or suspected faults that should result in a Metering System investigation.

Data point considered

To assess the population at risk, we considered Metering System investigation flows sent over the Data Transfer Network (DTN)¹. The below table provides the number of Metering System investigations as per both data sources.

Source	2015/16	2016/17	2017/18
HM14 all HH	89.3k	150.6k	149.0k
DTN 100 kW	58.7k	65.6k	57.9k
DTN Sub 100 kW	8.5k	45.3k	50.9k

- DTN data does not provide a complete view of the market, however we estimate coverage of faults to be >86%
- In relation to the population of each market segment, we see high volumes of Metering System investigations
- DTN data confirms that of the total faults reported in 2017/18 there were 29.5k and 26.4k unique Metering System Ids in the 100 kW and sub 100 kW markets respectively
- The volumes reported through PARMS are significantly higher than those observed via DTN extracts. As the HM14 Serial reports on all D0002s, spurious D0002 submissions

¹ Timely HH Meter Investigation Requests

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Forecast

Below are the key considerations and assumptions when forecasting the at risk population in the 2020/21 period:

- As PARMS Serial HM14 does not provide a view of the two HH market segments, and the difference between the impact of faults in each segment is assumed to be large due to the differing average volumes of energy per Metering System, we relied on volumes reported through DTN analysis
- We up scaled the volume of faults observed through DTN extracts to take into account the estimated DTN coverage of the process

Failure rate

From the population at risk, we need to estimate the proportion where the risk will manifest, i.e. the failure rate. To do this, we assess historical performance in the area and consider any upcoming changes that have the potential to impact future performance.

Data points considered

When assessing historical performance in the area, we considered the proportion of Metering System investigations resolved outside of BSC service levels. From the population of Metering System investigations in the previous table, the following table provides the proportion that were resolved outside of BSC service levels.

% Faults Resolved after SF	2016/17	2017/18	2018/19
100kW_HH	33.89%	34.96%	31.37%
Sub_100kW_HH	30.83%	34.69%	28.77%
NHH	28.72%	19.55%	19.48%

- In both markets, in excess of a third of Metering System investigations are resolved outside of BSC service levels
- Whereas in NHH improvements to timeliness have been made and retained

Forecast

Below are the key consideration and assumptions when forecasting failure rates in the 2020/21 period:

- We have assumed that we are going to see similar failure rates than those observed in previous years

Impact

To estimate the impact of a risk we need to understand the days impacted and error volume on average per instance.

Average days impacted

Considering Metering System investigations as observed through DTN extracts, we assessed the average number of days that a Metering System investigation is resolved outside of BSC service levels. The following table provides a view of the average calendar days that Metering System investigations are resolved outside of BSC service levels as per DTN extracts.

Average Days Impacted	2016/17	2017/18	2018/19
100kW HH	86	83	74
Sub 100kW HH	104	94	80
NHH	119	86	71

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Average error per day

As different types of faults will have different impacts on Settlement, we wanted to understand the approximate breakdown of root causes. To do this, we took a random sample of 2,450 HH 100 kW Metering System investigations from DTN data and manually assigned them to root cause categories. The following table provides the breakdown per root cause and the proportion of the random sample they equated to.

Root cause	Pct sample
Communications	68.86%
MTD quality	9.77%
Clock drift	6.70%
Energisation	3.72%
Meter fault	3.39%
Consumption query	2.90%
Phase failure	1.39%
Manual download failure	1.14%
Main/check failure	0.86%
Battery fault	0.53%
Proving test failure	0.45%
Site safety check	0.29%

- When manually assigning faults to categories, we relied on the description provided by the raising participant
- Metering System investigations due to remote communications failures accounted for the majority of the sample by a wide margin
- The second largest root caused related to incorrect Meter Technical Details, e.g. incorrect number of channels
- ELEXON has put each fault into the most prevalent root cause of failure, should more than one root cause be applicable

For a subset of root cause categories (e.g. clock drifts) equating to approx. 8% of the sample we determined there to be little to no impact on Settlement. For a subset of root cause categories (e.g. communications failures) equating to approx. 83.5% of the sample we determined that the likely impact was estimated data. For a subset of root cause categories (e.g. Meter faults) equating to approx. 8.5% of the sample we determined the likely impact was erroneous actual data.

For each impact category described above, we used the average impact per day as per the standard rate card. Please see the rate card document for further details.

Forecast

Below are the key consideration and assumptions when forecasting impact values in the 2020/21 period:

- The sample of Metering System investigations is representative of the wider population
- The Metering System investigations in the upcoming period will have a similar split in terms of root cause to that of the sample
- The HH sub 100 kW market will have a similar breakdown in terms of root cause to the HH 100 kW market
- Communication failures in the HH market will be, to some extent, mitigated by Data Collectors obtaining hand held reads. Following assessment of communications failures from the random sample, we made adjustments to the number of days impacted to account for hand held read mitigation

We convert the error volume into a monetary value by the forecast system buy and sell price for the upcoming period.

Other considerations for this risk

- The fault resolution process has been reported as a significant issue by BSC Auditor since 2002. Following the 2017/18 BSC Audit, fault resolution was identified as the joint top Settlement impacting issue (of processes within scope of the BSC Audit)

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- There is a current BSC Issue open ([Issue 73](#)) that is reviewing fault management and resolution timescales. As a result of this work, we may see improvements in the fault resolution process in future