

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 following a suspected or identified fault

Does not cover: Faults that are yet to be identified

Estimated impact in 2019/20

| HH market | Lower | Middle | Upper |
|------------|-------|--------|--------|
| 100 kW | £8.0m | £14.7m | £26.2m |
| Sub 100 kW | £1.1m | £2.1m | £3.7m |

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) and Performance Assurance Reporting and Monitoring System (PARMS) Serial HM14¹. 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 | 65.3k | 57.0k |
| DTN Sub 100 kW | 5.7k | 40.7k | 48.7k |

- 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 29k and 25k 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 will be captured

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 2019/20 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.

| Source | 2015/16 | 2016/17 | 2017/18 |
|----------------|---------|---------|---------|
| HM14 | 21% | 35% | 44% |
| DTN 100 kW | 30% | 34% | 34% |
| DTN Sub 100 kW | 37% | 32% | 34% |

➤ In both markets, in excess of a third of Metering System investigations are resolved outside of BSC service levels

Forecast

Below are the key consideration and assumptions when forecasting failure rates in the 2019/20 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.

| Source | 2015/16 | 2016/17 | 2017/18 |
|----------------|---------|---------|---------|
| DTN 100 kW | 79 | 76 | 65 |
| DTN Sub 100 kW | 110 | 89 | 71 |

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 top five root causes and the proportion of the random sample they equated to.

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| Root cause | Pct sample |
|----------------|------------|
| Communications | 68.86% |
| MTD quality | 9.77% |
| Clock drift | 6.70% |
| Energisation | 3.72% |
| Meter fault | 3.39% |

- 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 large root caused related to incorrect Meter Technical Details, e.g. incorrect number of channels

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 2019/20 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)
- 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