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Data quality in future

This note is optional pre-reading for the workshop session on 30 October, where we will discuss the issues covered.

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Audience	Workshop attendees
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1. Summary

Purpose of note

1.1. As we begin to consider whether or not to centralise functions currently performed by supplier agents, we would like to develop an initial scenario for the data quality issues that will need to be identified and addressed in future.

1.2. We would like to discuss the future of data quality with you at our workshop on 30 October. This note is intended to act as a **starting point for the discussion**. We look forward to hearing your comments, and we will refine our thinking in light of them. The discussion questions will be:

- What do you think about the key drivers for changes in data quality and their impacts?
- What do you think about the scenario for the future of data quality?
- Given the scenario, do you think there are any implications for whether or not to centralise functions currently performed by supplier agents?

1.3. This note is therefore a **series of prompts to promote discussion**. It does not represent a settled view from the project team or from Ofgem.

Key messages

1.4. At this stage, it appears that current data quality issues should be significantly reduced by two main drivers: smart metering and market-wide half-hourly settlement.

- Smart meters will store data and allow it to be retrieved remotely. They will make it possible to gather data more frequently and more accurately, including for specific days where required for processes like Change of Supplier. This should reduce current issues resulting from missing or inaccurate consumption data.
- Market-wide half-hourly settlement will simplify settlement by avoiding relying on standing data. The Half-Hourly Data Collector will not need information on the meter registers, and therefore will not need to obtain the Meter Technical Details. Using actual data will also eliminate the need for Annualised Advances, and the Estimated Annual Consumption will only be used for estimation. These simplifications should reduce or eliminate current issues resulting from missing or inaccurate standing data.

1.5. In future, the issues affecting data quality could therefore include technical issues with obtaining data, issues around appointments, and issues with parties not following procedures correctly. Manual processing of information, and implementation of industry changes may also contribute to data quality issues. New issues may also emerge.

2. Introduction

Context

2.1. We are running a project on market-wide half-hourly settlement (HHS). One of the workstreams is to consider whether or not to centralise functions currently performed by supplier agents. This is an important question, and we want to come to an evidence-based decision about which option is in the best interests of consumers.

2.2. The processes set out in the Balancing and Settlement Code (BSC) seek to ensure that the data used in settlement is as accurate as possible. However, issues can occur which limit the accuracy of settlement data, on either a transitory or a permanent basis.[1] We refer to these as exceptions. The functions currently performed by supplier agents contribute to identifying, mitigating and resolving exceptions.

2.3. The energy market is changing, due to developments like the smart meter roll-out and the potential introduction of market-wide HHS. The issues that supplier agents currently work to address may therefore change in future.

2.4. Before considering whether or not to centralise functions currently performed by supplier agents, **we would like to develop an initial scenario for the issues that will need to be identified and addressed in future**. This is a key piece of context, as the nature of these issues may affect who is best-placed to address them.

2.5. The Target Operating Model (TOM) for market-wide HHS could identify changes to the functions and processes needed in settlement. However, the decision on whether or not to centralise functions currently performed by supplier agents is reserved to Ofgem. We will consider the TOM work carefully as it develops, but we need an initial scenario for the issues affecting data quality in future in order to progress towards our decision.

Scope

2.6. To enable a manageable discussion within the time available at the workshop, this note only looks at **DCC-enrolled smart meters**. We recognise that the issues affecting data quality may be different for other types of meters.[2] We would be happy to receive any comments about those meters outside the workshop.

Approach

2.7. We have considered exceptions that are currently present in both the non-half hourly (NHH) and half-hourly (HH) segments. We think that these are both potentially relevant for customers who are settled NHH now, but would be settled HH under market-wide HHS.

2.8. When referring to current issues, this note includes some references to the details of how settlement is carried out at present (eg to specific data flows). This is simply to try and provide clarity for the purposes of this note – it does not prejudge how we think settlement could be organised in future under the final TOM.

[1] Many issues will be resolved before the final reconciliation run (RF). These may affect the accuracy of previous settlement runs, but will not affect the final settled volumes. Other issues will remain unresolved at RF, and end up being crystallised in settlement.
[2] For example, there have historically been problems with transferring passwords for advanced meters.

Sources

2.9. This note draws on responses to our recent voluntary Request for Information (RFI).[3] As these were confidential, it does not attribute material to particular stakeholders.

2.10. We have also examined the current issues identified through the BSC Audit[4] and the BSC Auditor's Summary of Market Issues,[5] as well as the future risks considered as part of the Performance Assurance Framework (PAF) review.[6]

2.11. We have supplemented this with our own knowledge of the settlement process and initial discussions with stakeholders.

Structure

2.12. There appear to be two key drivers which could affect data quality in future:

- **Smart meters** will allow remote retrieval of data – section 3 discusses this driver.
- **Market-wide HHS** would simplify the settlement process (if implemented) – section 4 discusses the incremental impact of this driver.

2.13. Other drivers may also affect data quality – we discuss these in section 5.

2.14. Section 6 then provides a view on the remaining data quality issues that may be present in future, after the developments discussed in the preceding sections.

3. Smart meters

3.1. Smart meters store data and allow this to be retrieved remotely. This should reduce a number of current exceptions, or make them easier to resolve.

3.2. Remote retrieval will make it easier to **gather data more frequently**. For example, taking meter readings will no longer be dependent on getting physical access to a meter, which could depend on the customer being available. Among the potential consequences:

- There should be a reduced risk of meter reading backlogs,[7] and there should be fewer exceptions arising from missing consumption data.[8]
- In addition, even where data is missing, the materiality may be lower if more frequent data retrieval reduces the time since the last reading.
- With faster data retrieval, data should be processed through settlement earlier, making it more likely that problems will be identified well before the final reconciliation run (RF). This may help reduce the issue of NHH Data Collectors (NHHDCs) having to try and resolve problems which span RF.[9]

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[3] https://www.ofgem.gov.uk/system/files/docs/2017/08/rfi_-_supplier_agent_functions.pdf
[4] https://www.elexon.co.uk/wp-content/uploads/2016/08/BSC-Audit-Report-31-March-2017-FINAL-Public.pdf
[5] https://www.elexon.co.uk/wp-content/uploads/2017/07/05_PAB198_07B_BSC-Auditors-Summary-of-Market-Issues-2016-17.pdf
[6] The Issue 69 workgroup developed a Smart Risk Register. https://www.elexon.co.uk/wp-content/uploads/2016/10/13_PAB197_07A_Interim-Issue-69-Report-Att_A-smart-risk-evaluation-v1.0.pdf
[7] Meter reading backlogs are mentioned as part of an NHH issue in the BSC Audit ("NHH standing data flow and meter reading backlogs"). This relates to the D0004 data flow (Notification of Failure to Obtain Reading).
[8] "NHHDA D0095 exception report" is mentioned as an issue in the BSC Audit. Two exception codes on the D0095 (Non Half Hourly Data Aggregation Exception Report) relate to missing consumption data. These are E02 (Missing subsequent consumption data) and E06 (Missing preceding consumption data), which are both material.
[9] The issue of "Data fixes required to resolve post-RF D0023 rejection records" was mentioned in the Summary of Market Issues. (D0023 - Instruction Failure Reason Code).

3.3. When data is gathered, remote data retrieval should mean that it is **more accurate**. This is because it will remove the potential for human error when taking pedestrian meter reads. Among the potential consequences:

- This should reduce the potential for large or erroneous values for the Estimated Annual Consumption (EAC) and Annualised Advance (AA)[10] to result from manual error in meter reads.

- It should also reduce the chance of readings from different registers being recorded incorrectly through manual error. (There might still be a risk of suppliers failing to ensure that the Standard Settlement Configuration (SSC) matches the registers configured on the meter).

3.4. By storing data, smart meters make it possible to **access data for a particular day**, even if the data is not retrieved on that day. This should help with industry processes where a reading is required for a particular day, such as Change of Supplier (CoS).[11]

3.5. More generally, smart meters may have **other benefits** for data quality. For example:

- The supplier will receive alerts from the smart meter. This may help it to identify meter faults quickly – although it will not in itself ensure action is taken to resolve them.[12]

- The interoperability of DCC-enrolled smart meters should allow suppliers to gain meters easily, avoiding some of the previous issues with advanced meters.[13]

- The Summary of Market Issues states that "it was raised by parties that smart Meters do not generally experience the same number of Revenue Protection issues as traditional NHH Meters. As such with the move towards smart Metering it is anticipated there will be a reduction in the number of scenarios impacting Suppliers".

3.6. However, some stakeholders said that there may be **transitional issues** linked to the smart meter roll-out which could increase exceptions in short-term due to: uncovering legacy issues, the volume of meter exchanges,[14] or the change as suppliers take on responsibility for commissioning meters. In the longer-term, the quality of the metering information may be higher, once any legacy issues are resolved.

3.7. On an ongoing basis, several stakeholders said the move to smart metering creates a risk of exceptions if it is not possible to **communicate with meters**. Given that data is stored on the meter, it could still be retrieved once any issues were resolved. This means that any effect should be on intermediate settlement runs rather than on RF. (Settlement timescales are being considered through the TOM work, and so the timing of RF may change – this would affect the time available to resolve issues).

4. Market-wide half-hourly settlement

4.1. HHS is much simpler than NHH settlement, as it **does not rely on standing data**, which should reduce the number of exceptions.

[10] "Large/erroneous EACs and AAs" is an issue mentioned in the BSC Audit.
[11] In relation to Change of Supplier, the Summary of Market Issues mentions delays on readings (D0086 – Notification of Change of Supplier Readings), and a lack of BSCP defined timescales within the Supplier Disputed Reading process. Once smart meters are in place, it should be easier to take correct Change of Supplier readings. This is recognised in the new smart Change of Supplier process, introduced through BSC modification P302.
[12] "Metering System faults not resolved" is mentioned as an issue in the BSC Audit.
[13] For example, issues with the D0313 (Auxiliary Meter Technical Details) data flow.
[14] The Summary of Market Issues notes that meter exchanges (including those linked to the smart meter roll-out) can create difficulties when this means the wrong Meter Technical Details are used.

4.2. HHS is based on the HH profile data log on a smart meter, which avoids the need to look at registers for settlement purposes.[15] This means that the HH Data Collector (HHDC) does not need to know about the registers or the SSC, and therefore **does not need to obtain the Meter Technical Details** (MTDs).[16] Among the potential consequences:

- This reduces the amount of information that the HHDC will need to update, and therefore the potential for error on their part.

- It also reduces the potential for errors by the supplier (in ensuring that the SSC matches the registers configured on the meter) or by the meter operator (in transforming smart meter configuration details into MTDs).[17]

- As readings will be taken from the HH profile data log, there will be no need to check the reading structure against the SSC. One stakeholder said that this was "one of the key exceptions from the NHH process".

4.3. Second, because HHS is based on actual HH data, there is **no need to use the AA**, and the **EAC is only used for estimation**.[18] Among the potential consequences:

- A missing EAC will be less important.[19] For example, there will be no dependence on getting an accurate EAC from previous suppliers or agents.

- Large or erroneous EACs and AAs will no longer matter (except when an EAC is needed for estimation).[20]

- There will be no need to validate against the EAC/AA.

- There should be fewer problems created by an incorrect energisation status.[21]

- Problems which span RF caused by errors in standing data should be less frequent, as the EAC will only be used for estimation.[22]

4.4. There may also be other impacts on data quality from moving to HHS. For example, the Long Term Vacant process will no longer be required, as it should be possible to use the actual HH data to show when a meter has zero consumption.[23]

4.5. On a transitory basis, market-wide HHS could still require a **Change of Measurement Class** (CoMC) process, which could lead to exceptions. However, a new CoMC process was introduced as part of the elective HHS changes – this may reduce the risk of exceptions. Once market-wide HHS is complete, CoMC may no longer be required.[24]

[15] Suppliers will still need to use registers for billing purposes.
[16] The HHDC will need to estimate where HH data is unavailable. However, at present, HHDCs do not receive an EAC split by register. (Instead they receive a single EAC on the D0289 (Notification of MC/EAC/PC) data flow). Any estimation requiring profiling therefore currently has to use a single profile, rather than profiling by register.
[17] The PAF review identified several (NHH) smart risk areas where MTDs were relevant, including supplier-agent interfaces, meter operations and data processing. The BSC audit also mentions "NHHDA D0095 exception report" as a current issue. One of the exception codes relates to when the SSC is incorrect (E13).
[18] Estimation should be relatively infrequent. Less estimation should be required with more frequent data retrieval – and not all the methods for HH data estimation require an EAC.
[19] The "NHHDA D0095 Exception Report" is listed as an issue in the BSC Audit. In particular, exception code E01 (No EAC or AA for appointed DC) is considered material.
[20] "Large/erroneous EACs and AAs" was mentioned as an issue in the BSC Audit.
[21] "Energisation status not confirmed to Data Collectors" is an NHH issue mentioned in the BSC Audit. The BSC Audit states that the impact of incorrect energisation status is lower in the HH market than the NHH market, as customers are settled on actual meter reads rather than EACs.
[22] "Data fixes required to resolve post-RF D0023 rejection records" is mentioned in the Summary of Market Issues.
[23] "Issues with the Long Term Vacant process" is mentioned as an issue in the BSC Audit.
[24] This would be the case if all meters were settled using the same HH process, with estimation used for meters where HH data was not available.

5. Other possible drivers

Centralised Switching Service

5.1. Ofgem is running a programme to implement faster and more reliable switching. As part of this, we are proposing the introduction of a Central Switching Service. We asked stakeholders whether they thought this would affect exceptions in settlement. We received relatively few suggestions that there would be an impact.

5.2. The switching programme includes work to improve the quality of industry address data. This is in order to reduce the volume of erroneous, delayed and unsuccessful switches. In our view this is a slightly different issue to data quality for settlement.

The PAF Review

5.3. One stakeholder said that we should consider the PAF review, which it said could impact the reporting and underlying causes of exceptions. The PAF review is at a relatively early stage, which makes it difficult to forecast its potential impacts.

Commercial developments in the market

5.4. One stakeholder said that "inexperienced market entrants with fast growth plans" could affect exceptions. There has already been a significant increase in the number of suppliers over previous years – from 14 active domestic suppliers in December 2011 to 54 in March 2017.[25] Any issues related to entry may therefore already be incorporated in the current state of exceptions.

5.5. More generally, new types of parties may enter the market to provide innovative products and services. As flagged in Dermot Nolan's recent speech, Ofgem has begun considering questions around the current supplier hub model. For example, only licensed suppliers can perform settlement at present – this could restrict entry from parties like electric car manufacturers and Peer-to-Peer energy providers.[26]

5.6. There is an open question about whether or not more customers would seek to appoint their own agents in future. If they did, one stakeholder said that there could be a potential impact on exceptions, at least temporarily. Another stakeholder also said that it can be challenging to manage the performance of customer-appointed agents. At this stage, we do not have a view on whether this is likely to be a driver of exceptions or not.

5.7. If switching rates increased, then the increased number of switches could potentially affect exceptions. However as noted above, market-wide HHS would reduce the importance of transferring standing data between old and new suppliers, and therefore could limit the importance of switching as a source of exceptions.

6. Summary of possible future data quality issues

6.1. Given the drivers discussed above, we now try to describe which issues may exist in future. We also look at the implications for supplier agents.

6.2. Some exceptions will occur when there are **technical issues which prevent successful data retrieval**. The PAF review noted that there could be future risks related to metering,[27] communications, and the DCC user interface. Resolving these exceptions will be outside the direct control of HHDCs – for example, meter operators are responsible for fixing meter faults. HHDCs could help to identify issues and flag these to other parties for

[25] https://www.ofgem.gov.uk/data-portal/retail-market-indicators
[26] https://www.ofgem.gov.uk/system/files/docs/2017/10/euk_final_19.10_v2.pdf
[27] The BSC Audit currently includes issues in relation to "Metering faults not resolved" and "Commissioning".

resolution. Suppliers may also be able to do this if they are sending service requests to retrieve data and are receiving alerts from the smart meter.

6.3. Some exceptions may also be linked to **appointments**. This is an issue in the HH market at present,[28] so may not be resolved by market-wide HHS. For example, one stakeholder said exceptions can arise when de-appointment flows[29] are received late. The HH Data Aggregator (HHDA) has an important role in identifying these exceptions at present.

6.4. Some exceptions may still result from parties **not following procedures correctly**. For example, the PAF review noted the possibility of suppliers providing meter readings in the wrong units. One stakeholder also gave the example of flows being sent out of the order specified in the BSC Procedures. Not following procedures correctly is a risk with any type of party. At present, HHDCs and HHDAs would be responsible for identifying such exceptions in order to mitigate the impact on settlement.

6.5. There may also potentially be some exceptions linked to the **manual processing of information**.[30] The increased volume of data involved in market-wide HHS could prompt agents to invest in new automatic processes, rather than relying on manual processes.

6.6. Several stakeholders suggested that exceptions may also occur linked to the implementation of **industry changes**. Changes may result in transitional issues – however, it is important that all industry parties are able to manage changes promptly and successfully.

6.7. **New sources** of exceptions may also emerge in future. We cannot predict what form these would take, and therefore we do not know what implications these would have on agents.

[28] "HH Data Quality: HHDA D0235 exception report and D0004 flows backlog" is mentioned as an issue in the BSC Audit. (D0235 – Half Hourly Aggregation Exception Report). Two of the exceptions on the D0235 relate to consumption data arriving from the incorrect DC, and for the incorrect supplier.
[29] D0151 – Termination of Appointment or Contract by Supplier
[30] The BSC Audit made a process observation (in the metering section) that "there is still a high level of manual processing of information, increasing the risk of errors entering Settlement", although it said that this was "particularly by the Central Systems agents". It also noted that "an increased number of agents are now implementing monitoring controls to mitigate the risk associated with manual processing errors".