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Supplier agent functions under market-wide half-hourly settlement

Working paper

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Overview:

Supplier agents carry out certain functions related to settlement on behalf of suppliers (or, in some cases, customers). As part of our work on market-wide half-hourly settlement, we are considering whether or not to centralise functions currently performed by supplier agents.

At this initial stage, we have focussed on considering whether or not a central agent could have merit in principle, by looking at a set of key areas. This working paper sets out our analysis to date on these areas. Our analysis is ongoing, and so our thinking is subject to change. It also explains where we have open questions at this stage, and sets out the principles we intend to use to make an assessment.

This is not a consultation document – we will consult at a later stage before we make a decision. However, we welcome any views or further evidence from stakeholders. Please contact us at: half-hourlysettlement@ofgem.gov.uk. We would be happy to arrange a meeting or teleconference, or to take comments by e-mail.

Context

Our work on supplier agent functions is part of our project on market-wide half-hourly settlement (HHS). We are considering this through a Significant Code Review. Other workstreams within this project include: designing the Target Operating Model for future settlement arrangements, considering policy issues such as around access to half-hourly consumption data for settlement purposes, and delivering a business case.

The aim of our work on market-wide HHS is to facilitate a smarter, more flexible energy system and to empower consumers to take an active role in the energy system transition as the sector decarbonises.

The move to market-wide HHS is part of a wider set of reforms looking to facilitate the energy system transition and to improve outcomes for consumers. These reforms cover both work in relation to network charging (eg on electricity network access reform) and in relation to retail markets (eg the switching programme).

Associated documents

Ofgem (2016), Consultation on market-wide half-hourly settlement: aims and timetable for reform
https://www.ofgem.gov.uk/publications-and-updates/consultation-market-wide-half-hourly-settlement-aims-and-timetable-reform

Ofgem (2017), Electricity Settlement Reform Significant Code Review: Launch Statement, revised timetable, and request for applications for membership of the Target Operating Model Design Working Group
https://www.ofgem.gov.uk/publications-and-updates/electricity-settlement-reform-significant-code-review-launch-statement-revised-timetable-and-request-applications-membership-target-operating-model-design-working-group

Ofgem (2017), Request for Information on supplier agent functions
https://www.ofgem.gov.uk/publications-and-updates/request-information-supplier-agent-functions

Ofgem (2017), Data quality in future
https://www.ofgem.gov.uk/system/files/docs/2017/11/data_quality_in_future_-_pre-reading.pdf

Ofgem (2018), Market-wide Half-Hourly Settlement: Strategic Outline Case
https://www.ofgem.gov.uk/publications-and-updates/market-wide-half-hourly-settlement-hhs-strategic-outline-case

Contents

Executive Summary

Supplier agents carry out certain functions related to settlement on behalf of suppliers (or, in some cases, end customers). For example, supplier agents validate consumption data and aggregate it for submission to central systems.

As part of our work on market-wide half-hourly settlement (HHS), we are considering whether or not to centralise functions currently performed by supplier agents. Market-wide HHS provides an opportunity to consider whether these functions could be delivered more efficiently in another way, especially given that the smart meter roll-out will affect the responsibilities of supplier agents in any case. The CMA's Energy Market Investigation recommended that we should consider the cost-effectiveness of alternative designs, such as a centralised entity.

Our analysis is at an initial stage. This working paper is intended to provide an update on our thinking to date and information about our future work in this area.

Analysis to date

As part of our initial analysis, we have looked at six areas to assess whether or not a central agent could have merit in principle. We have focussed initially on the Data Collector and Data Aggregator roles.

For three of these areas, we have reached an initial view. We do not currently intend to do significant further work in these areas, but we will consider any feedback or further evidence before reaching a decision.

- We think the role of agents in addressing data quality problems will be less important in future, whether they are centralised or not. The number of exceptions should fall significantly due to the introduction of smart metering and market-wide HHS. In addition, responsibility for communicating with smart meters to retrieve data has been reallocated from supplier agents to the DCC. Our provisional view is therefore that there would be little scope for a central agent to deliver significant improvements in data quality.

- Market developments, especially market-wide HHS, should also reduce the importance of transferring data between parties (hand-offs) as a source of data quality issues. At this stage, it does not appear that there would be particular advantages from reducing the number of hand-offs by introducing a central agent.

- The settlement performance of supplier agents appears to vary. There is some evidence to suggest that suppliers or consumers seek higher levels of performance for non-settlement reasons. It is less clear whether they also place the same value on settlement performance for its own sake, and therefore whether a central agent would remove an important differentiated service.

There are three other areas where, although we have some initial views, we also have open questions. We plan to focus on these areas over the next few months.

- There may be some economies of scale from a central agent, through being able to spread fixed costs (eg IT systems development) over a larger customer base. However, supplier agents would also be able to benefit from some economies of scale under market-wide HHS, so the incremental economies of scale from a central agent may be small. We will seek to refine our understanding of the size of economies of scale over the next few months.

- It appears that third parties could continue to provide non-settlement value-added services under a central agent model, provided that they had access to the necessary data (with the consumer's consent). We have not seen a compelling argument why acting as a supplier agent is an essential condition to provide such value-added services. However, we will seek to examine further whether there are cost savings or synergies from supplier agents providing value-added services. We will also consider how we can ensure that no one type of party is able to prevent consumers from accessing innovative products by restricting access to consumption data.

- We have not seen evidence that supplier agents have been a particular source of delay to industry changes to date. At this stage, we have also not identified particular changes which might occur in future and where a central agent would be essential. For example, if local supply arrangements required more granular information about a meter's location it would be possible to amend industry data flows and parties' systems accordingly.

  However, we will explore further whether or not a central agent model could be a more flexible way of implementing changes on an ongoing basis, as new business models emerge. We will also consider whether or not having disaggregated data available centrally could make it easier to deliver a range of future data needs. For example, this would remove the constraint of settlement data being currently split by supplier.

Next steps

We will continue our analysis, and consider any feedback from stakeholders. We next intend to issue an update on this workstream in Summer 2018, following our further work. At that point, we will assess whether we need to gather further information, or whether we are in a position to consult.

We will consult on the issue of supplier agent functions before making any decision. When we do this, we propose to use a set of assessment principles to help us make the right decision. We have set out these principles in this working paper – they are: carefully considering alignment with our regulatory stances (particularly on competition and innovation), delivering settlement functions efficiently, supporting the realisation of consumer benefits in a future market, limiting unintended consequences, flexibility in adapting to an uncertain future, and complying with legal requirements.

1. Introduction to workstream

Chapter Summary

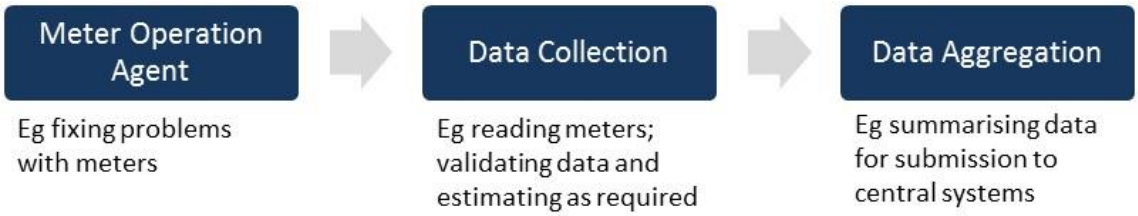
We explain what supplier agents are. We set out why we are considering whether or not to centralise functions currently performed by supplier agents. We note the interactions with other market-wide HHS workstreams.

What are supplier agents?

1.1. Under the Balancing and Settlement Code (BSC), electricity suppliers appoint supplier agents to carry out certain functions related to settlement. Some larger business customers contract with their own agents, but the supplier retains responsibility for compliance with the BSC, under the supplier hub principle.

1.2. There are three supplier agent roles for metered supplies[1].

Figure 1 – Supplier agent roles



1.3. The Data Aggregator role may partly reflect the technology which existed at the time it was introduced. The available technology may have limited the ability of central systems to cope with disaggregated data.

1.4. There are a number of supplier agents who are not part of a supplier group. Five large suppliers also have in-house supplier agents.[2]

Introducing the issue

1.5. We are considering **whether or not** to centralise functions currently performed by supplier agents. As stated previously, this is an important question, and we do not currently have a preferred option.[3]

[1] There are additional roles in relation to unmetered supplies.
[2] A full list of qualified supplier agents is available on the ELEXON website: https://www.elexon.co.uk/bsc-and-codes/bsc-signatories-qualified-persons/
[3] Ofgem (2017), Request for Information to inform initial consideration of whether or not to

Why are we considering this issue now?

1.6. There has been a long-standing question about whether or not to centralise functions currently performed by supplier agents. The question of whether or not to centralise was always intended to be examined as part of previous Ofgem work on HHS, and we held early discussions with the previous Ofgem Electricity Settlement Expert Group.[4]

1.7. One reason for considering this issue is the **smart meter** roll-out. Data retrieval has already been centralised for smart meters, as meters will be read via the DCC, rather than through communications services provided by Data Collectors.[5] In addition, suppliers will be responsible for configuring meters, rather than Meter Operators. The market design has therefore already moved away from supplier agents having end-to-end responsibility for settlement data. This raises a question about whether their remaining responsibilities could more efficiently be delivered in other ways.

1.8. Another reason is that **market-wide HHS** will likely involve significant investment in new systems and processes, including by supplier agents if they are retained. It therefore makes sense to consider the case for any structural changes before locking-in investment by existing parties. We have also heard that existing supplier agents may be reluctant to invest while there is uncertainty about their future.

1.9. Finally, the **CMA's Energy Market Investigation** recommended that we should consider the cost-effectiveness of alternative designs, such as a centralised entity responsible for Data Collection and Data Aggregation.[6]

Scope

1.10. It would be possible to centralise functions in relation to certain **types of meters** but not others. In particular, there could be different responsibilities for

centralise Data Collection and Data Aggregation under mandatory half-hourly settlement, p2. https://www.ofgem.gov.uk/system/files/docs/2017/08/rfi_-_supplier_agent_functions.pdf

[4] https://www.ofgem.gov.uk/electricity/retail-market/forums-seminars-and-working-groups/electricity-settlement-expert-group

[5] The DCC does not currently perform data retrieval for SMETS1 meters, but the intention is that these meters will be enrolled with the DCC before implementation of market-wide HHS.

[6] CMA (2016) Energy market investigation - Final report, paragraph 20.28(a)(iii) https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf

smart meters and advanced meters. This would reflect that the DCC carries out data retrieval for smart meters,[7] but not for advanced meters.[8]

1.11. The focus of our Significant Code Review is on HHS for domestic and smaller non-domestic customers. However, were we to consider that a central agent had merit in principle for these customers, we would then need to consider any implications for supplier agent services for larger non-domestic customers.

1.12. Second, it would also be possible to centralise certain **functions** only. There are various potential combinations. It would be possible to centralise: (i) all of the Meter Operator, Data Collector and Data Aggregator roles, (ii) Data Collector and Data Aggregator roles only, or (iii) just the Data Aggregator role. In each case, centralisation would not necessarily mean a single central agent. For example, there could be separate central agents in each region.

1.13. Meter operation is different to data collection and data aggregation, because it involves site visits, even for smart meters. The need for site visits may reduce the potential for any economies of scale from centralisation. In principle, the case for centralising the Meter Operator role may therefore be weaker than for the Data Collector and Data Aggregator roles.

1.14. However, our November 2016 consultation noted views from some stakeholders that, if we introduced a central agent for other supplier agent functions, we might also want to consider the future role of Meter Operators.[9] We have not ruled out changes to the Meter Operator role, but our initial focus has been on the Data Collector and Data Aggregator roles.

1.15. If we concluded that centralisation did not have merit in principle for the Data Collector and Data Aggregator roles, then we would not consider centralising the Meter Operator role. However, if we considered that a central agent had merit in principle for the Data Collector and Data Aggregator roles, we would need to consider any implications for the Meter Operator role.

[7] A meter which, in addition to traditional metering functionality (measuring and registering the amount of energy that passes through it), is capable of providing additional functionality (for example, recording consumption in each half hour of the day and of being remotely read) is known as a smart meter. It must also comply with the technical specification set out by the government.

[8] The electricity supply licence defines an advanced meter as one that must be capable of recording half-hourly consumption data and of providing suppliers with remote access to this data. For the purpose of this paper, the main difference between smart and advanced meters is the centralisation of data retrieval for smart meters (noted in the text).

[9] Ofgem (2016) Mandatory Half-Hourly Settlement: aims and timetable for reform, paragraph 4.7. https://www.ofgem.gov.uk/system/files/docs/2016/11/mandatory_hhs_planning_consultation.pdf

Interactions

1.16. There are strong interactions between our work on supplier agent functions and other workstreams in the market-wide HHS project.

- The ELEXON-chaired Design Working Group (DWG) is developing a **Target Operating Model** (TOM) for market-wide HHS. At this early stage, ELEXON and the DWG are developing a number of skeleton TOMs. The majority of the skeleton TOMs could operate under either a supplier agent or a central agent model – although one TOM is a fully centralised model. This range of options enables us to avoid prejudging our decision on whether or not to centralise agent functions. However, we will need to take a decision on agent functions before the final detailed TOM can be produced. Ofgem will ultimately make the decision on the TOM produced by the DWG, with advice from the Design Advisory Board (DAB) and following consultation by ELEXON.[10]

- We are considering **access to data** for settlement purposes as another Ofgem policy workstream. There may be interactions with our work on agent functions. Different models for agent functions may have different implications for the assessment of the risks associated with data access. Areas where there are likely to be interactions include data security, privacy risks associated with parties misusing data and the practicalities and case for using anonymisation or pseudonymisation to enhance consumers' privacy.

  Different models for agent functions would therefore require different provisions for mitigating the privacy and/or security risks of the various options for data access. It is also possible that some combinations of data access and agent functions options might work together better than others.

- We are producing a **business case** for market-wide HHS, based on the best practice Five Case Model[11]. This Business Case will include an economic assessment of the costs and benefits of market-wide HHS, as well as setting out the strategic rationale for the project and examining how best to manage and deliver reform. The final version of the Business Case (the Full Business Case) will include a detailed economic assessment of a shortlist of options for market-wide HHS, narrowed

[10] The Design Advisory Board is a strategic board set up to provide guidance on the products developed by the DWG.
[11] The Five Case Model is a methodology for producing business cases for spending proposals. See Green Book guidance: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/469317/green_book_guid ance_public_sector_business_cases_2015_update.pdf

down from a longlist through a qualitative process.[12] We will need to feed the decision on agent functions into this shortlisting process, as the decision will influence the costs of implementing market-wide HHS and could potentially have a bearing on the size of the benefits that are achieved.

1.17. There are also possible links to other work within Ofgem. We discuss this at relevant points in chapter two.

[12] Ofgem (2017) Project Objectives and Assessment Options for the market-wide half-hourly settlement Business Case https://www.ofgem.gov.uk/publications-and-updates/project-objectives-and-assessment-options-market-wide-half-hourly-settlement-business-case

2. Summary of analysis to date

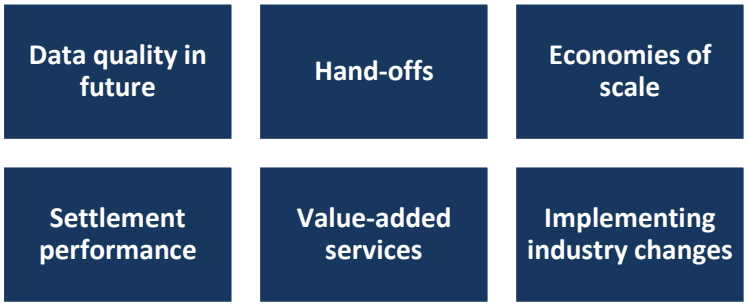
Chapter Summary

We have focussed on a number of areas for our initial analysis. We run through these in turn, setting out an overview of our current thinking in each area.

Introduction

2.1. We have started by looking at whether or not a central agent could have merit in principle. In order to progress this initial analysis, we have focussed on a number of specific areas (see Figure 2 below). These represent some of the key potential advantages and disadvantages of a central agent. We discuss these areas in turn in this chapter. Our analysis is ongoing, and so our thinking is subject to change.

Figure 2: Key areas for initial analysis



2.2. We gathered information from a range of sources. We issued a voluntary request for information (RFI) in August 2017.[13] This sought information from supplier agents and other interested parties. We are grateful to those who took the time to respond. We have supplemented this with desk research, information from consultation responses, data from ELEXON, and information received by Ofgem in previous work on settlement.

2.3. We have also discussed issues with stakeholders and refined our thinking in light of these meetings. In particular, we discussed our thinking on data quality at our roundtable in October. We have held bilateral meetings and calls with a number of stakeholders. We also provided an overview of this workstream to the DAB as context to their work advising us on the development of the TOM.

[13] Ofgem (2017) Request for Information on supplier agent functions https://www.ofgem.gov.uk/publications-and-updates/request-information-supplier-agent-functions

2.4. Where we obtained information on a confidential basis, we have anonymised the names of stakeholders below, by referring to the type of party. In general, these are self-explanatory. Some supplier agents are part of a supplier group and others are not – where we think it is necessary to make this distinction, we refer to them as "integrated supplier agents" and "standalone supplier agents" respectively.

Data quality in future

What is the issue?

2.5. The processes set out in the 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.[14] We refer to these as exceptions. The functions currently performed by supplier agents contribute to identifying, mitigating and resolving exceptions.

2.6. The energy market is changing, due to developments like the smart meter roll-out and the potential introduction of market-wide HHS. The exceptions that supplier agents currently work to address may therefore change in future. Understanding this is a key piece of context, as the nature of these exceptions may affect who is best-placed to address them.

Current evidence

Future of data quality

2.7. We considered evidence on the future of data quality, and provided a note to stakeholders ahead of our workshop in October 2017.[15] Stakeholders largely agreed with the picture we presented.

2.8. In summary, it appears that current data quality issues should be significantly reduced by two main drivers: smart metering and market-wide HHS.

2.9. Smart meters will store data and allow it to be retrieved remotely via the DCC. 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.

2.10. Where customers are settled HH, this will be based on actual HH consumption data. Market-wide HHS will therefore simplify settlement by avoiding relying on

[14] 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.
[15] Ofgem (2017), Data quality in future. https://www.ofgem.gov.uk/system/files/docs/2017/11/data_quality_in_future_-_pre-reading.pdf

standing data.[16] First, HHS is based on the HH profile data log on a smart meter, which avoids the need to look at registers for settlement purposes.[17] The Half-Hourly Data Collector (HHDC) will not need information on the meter registers, and therefore will not need to obtain the Meter Technical Details. Second, using actual data will also eliminate the need for Annualised Advances (AAs), and the Estimated Annual Consumption (EAC) will only be used for estimation.[18] These simplifications should reduce or eliminate current issues resulting from missing or inaccurate standing data.

2.11. We expect that there will still be some exceptions in future. For example, there could be issues around the implementation of industry changes. The nature of exceptions may also be influenced by policy decisions taken as part of the market-wide HHS project. For example, if settlement data from some meters was anonymised[19], this could affect the ability of parties to resolve exceptions. Some residual exceptions may be outside the control of agents.

Implications

2.12. If data quality improves significantly in future, this will probably reduce the importance of the role of agents, whether centralised or not. This may reduce the scope for a central agent to improve data quality, as it reduces the maximum potential improvement that a central agent could deliver.

2.13. However, having a smaller number of exceptions may also reduce the potential for supplier agents to differentiate themselves through their level of settlement performance. We discuss differentiation of settlement performance from paragraph 2.52 below.

2.14. Of the possible residual exceptions we have identified, a central agent might potentially help to reduce some of them.

- A central agent would avoid exceptions linked to appointing the Data Collector/Data Aggregator (whether as a standalone change of agent, or

[16] We use this term to refer to information beyond consumption data which is needed when a meter is settled NHH.
[17] Suppliers will still need to use registers for billing purposes.
[18] The DWG has agreed that the TOMs will aim to design out elements of the existing NHH profiling process, such as the use of AAs and EACs in aggregation. However, this only applies where register reads are available for meters where HH readings cannot be obtained from the meter. An ELEXON paper noted that "EACs may still be required for other processes such as defaulting".
ELEXON (2017), TOM baseline design principles: foundation for development, DWG03/01. https://www.elexon.co.uk/wp-content/uploads/2017/12/DWG03_01_TOM_baseline_principlesv1.0.pdf
[19] The decision on whether or not to centralise functions currently performed by supplier agents will influence the case for anonymisation or pseudonymisation.

as part of a Change of Supplier). This would no longer be required, as the central agent would stay appointed continuously.

- If there are exceptions linked to manual processing of information, then it is possible that a central agent might be able to use its greater scale to invest more in new automatic processes to address these – we consider economies of scale from paragraph 2.28 below.

- There was some discussion about customer-appointed agents at the workshop. Introducing a central agent would avoid any potential issues in relation to customer-appointed agents, as it would remove the ability of customers to appoint their own agents. However, if customer-appointed agents can be a source of exceptions, there may be alternative ways to resolve this. For example, BSC modification P332[20] raised the question of whether supplier agents should become BSC signatories.

2.15. However, there are other residual exceptions where our current view is that we would not expect a central agent to make a difference.

- Some exceptions could be linked to parties not following procedures correctly. This could be addressed through procedures which did not involve centralisation (eg increased performance assurance scrutiny). In any event, this risk is not limited to agents – exceptions could also be caused by suppliers and others not following procedures.

- At the workshop, there was a suggestion that erroneous transfers could be a source of future exceptions, as the supplier would lose access to historical data. A central agent would have continuous access to data (as well as potentially being able to draw on data it held already). However, a supplier or supplier agent could also achieve continuous access through the Other User role under the Smart Energy Code (SEC).

- When technical issues occur which prevent successful data retrieval, agents may be able to help to identify issues and flag these to other parties for resolution. There is no particular reason to expect that a central agent would be better able to do this than supplier agents.

2.16. There are also other potential exceptions where the impact of a central agent is unclear at this stage. For example, some exceptions could result from the implementation of industry changes. We consider implementing industry changes from paragraph 2.85 below.

[20] P332 – Revisions to the Supplier Hub Principle. P332 is currently paused subject to the outcome of the Electricity Settlement Reform Significant Code Review.

2.17. Overall, there are not many cases where it is clear that a central agent could help to address residual exceptions in future.

Summary of initial thinking

2.18. Data quality should improve significantly in future, especially due to the smart meter roll-out and market-wide HHS. This probably reduces the importance of the role of agents, whether centralised or not. However, it may also reduce the scope for a central agent to offer benefits by improving data quality. While there will be some residual exceptions, there are not many cases where it is clear that a central agent could help to address them.

Hand-offs

What is the issue?

2.19. One potential argument for a central agent is to reduce the number of exchanges of data between parties. We refer to these as hand-offs. In theory, reducing the number of hand-offs could reduce the opportunities for data to become corrupted, and would ensure that there was a single version of the truth. This could reduce the number of exceptions.

2.20. Some of the current interactions between agents could be internalised within a central agent. For example, if there was a central Data Collector/Data Aggregator, there would be no need to pass information between these agent roles. In addition, a central agent would have ongoing information about a meter point, even if a customer switched supplier.

2.21. The potential benefit of a central agent for reducing hand-offs was suggested in a paper written for the previous Settlement Expert Group, which said that "put another way, a distributed process architecture can cause data quality problems, as no one player has a single view of a site's data, and data is sent between these multiple bodies leaving scope for human and IT error".[21]

Current evidence

2.22. RFI respondents had very different views on importance of hand-offs. Some said hand-offs are important, particularly in the NHH market. For example, one supplier agent said that hand-off failure was the root cause for the majority of its exceptions.[22] One integrated supplier agent cited gaining control of hand-offs as a

[21] Paragraph 4.05 of:
https://www.ofgem.gov.uk/sites/default/files/docs/2014/08/dp_da_expert_paper_final.pdf
[22] Response to RFI Q2a.

reason for bringing its supplier agent work in house. It said that insourcing had led to an increase in its NHH settlement performance.[23]

2.23. However, other respondents disagreed that hand-offs were important. Three supplier agents said that data quality was the main factor.[24] Hand-offs may be the point at which underlying issues with the data become apparent,[25] rather than being the cause of exceptions. Furthermore, one supplier agent said that exceptions caused by hand-offs of consumption data between the Data Retriever, Data Collector and Data Aggregator are "non-existent" because they are often the same party. It said that those related to meter technical details and appointments are "marginal and almost always resolved before the relevant settlement run".[26]

2.24. Whatever the root cause, our initial view is that any issues around hand-offs should be significantly reduced by the introduction of market-wide HHS. As set out above, standing data is less important for HHS than for NHH settlement, which means there is less scope for hand-offs of this data to cause issues. We therefore think that the importance of hand-offs will fall under market-wide HHS.

2.25. A central agent would remove some hand-offs. These would be around the appointment of the HHDC or Half-Hourly Data Aggregator (HHDA), and in relation to passing consumption data between the HHDC and HHDA.[27] However, we have not seen evidence that removing these hand-offs (particularly the latter) would lead to significant benefits in terms of reducing exceptions.

2.26. There may also be other ways to reduce the number of hand-offs, rather than introducing a central agent. For example, the same agent can already be appointed as Data Collector and Data Aggregator, as a way of internalising hand-offs within one party. We could also consider reducing the number of hand-offs (relative to the elective HHS process) by having the supplier agent request consumption data directly, rather than receiving this via the supplier. When developing draft skeleton TOMs, the DWG's preliminary view was to focus on the skeleton TOMs where the Retrieval Service would be combined with at least the Processing Service.[28]

[23] Response to RFI Q2a.
[24] Response to RFI Q2a. Response to RFI Q2a. Response to RFI Q6.
[25] Response to RFI Q2a. Response to RFI Q6.
[26] Response to RFI Q2.
[27] See BSCP 502 3.4.6.9.
[28] ELEXON (2018), Draft Target Operating Models: Draft Skeleton TOMs for Evaluation, DWG05/01A. https://www.elexon.co.uk/wp-content/uploads/2018/02/DWG05_01A_DWG_Draft_TOMS_for_Evaluationv0.7.pdf

Summary of initial thinking

2.27. We consider that the importance of hand-offs will fall, especially because standing data is less important for HHS. Our provisional view is that it does not appear that a central agent would have a significant impact on the number of hand-offs or any consequent exceptions.

Economies of scale

What is the issue?

2.28. We want to investigate whether a central agent would have lower costs than supplier agents due to economies of scale from covering a larger number of customers. If there are large fixed costs of developing suitable systems, then these economies of scale could be significant. Economies of scale would ultimately reduce the costs of the service for consumers (assuming any cost reductions are passed on).

2.29. In order to structure our thinking, we can consider effects in three areas:

- **Spreading existing level of fixed costs over more customers.** Supplier agents have developed systems to automate some tasks at present. For this current level of automation and fixed costs, a central agent might be able to reduce unit costs through economies of scale.
- **Automation of more tasks.** It may be possible to automate some tasks that are not automated at present. This might be possible for a central agent, if they were able to spread fixed costs of developing suitable systems over more customers. In theory, this could allow cost reductions.
- **Spreading new fixed costs over more customers.** Supplier agents might have to incur new fixed costs to participate in HHS for domestic and small non-domestic customers. This is partly because the process is likely to be different from that used traditionally for large HH sites. Systems investment may also be required to accommodate a much larger number of HH meters. A central agent could avoid duplication of new fixed costs. However, the set-up costs for a new central agent could be larger than the incremental costs for supplier agents.

2.30. Supplier agents may also be able to benefit from economies of scale under market-wide HHS. This is because they would have more HH customers than they do at present. This could allow them to split costs over more customers, and also potentially automate more tasks.

2.31. The table below illustrates some of the factors we will eventually need to consider to compare the future costs of supplier agents and a central agent.

Table 1 – High-level framework for considering costs of delivering agent functions

	Supplier agents	Central agent
Starting point	Annual cost per meter for existing agent	
Spreading existing level of fixed costs over more customers	Possible economies of scale	Possible economies of scale
Automation of existing tasks	Possible economies of scale	Possible economies of scale
Spreading new fixed costs over more customers	Incremental costs required for market-wide HHS	Set-up costs for central agent
End point	Future annual cost per meter for supplier agents	Future annual cost per meter for central agent

2.32. We have gathered some initial information on costs through our RFI and stakeholder engagement. However, due to commercial sensitivity, there are limitations on the information that we can publish in this working paper.

Current evidence

Spreading existing level of fixed costs over more customers

2.33. The possibility of economies of scale was recognised by a supplier agent in response to the business case RFI. It also said that there would be economies of scale because its agent systems were already certified for several million customers.[29]

2.34. As part of the RFI, we asked for information about the proportion of supplier agents' existing HHDC/HHDA[30] costs which relate to IT systems. The limited data received suggests that supplier agents differ in the extent to which they rely on IT systems for HHDC/HHDA services. It also suggests that IT systems (even if interpreted in broad terms) generally represent a minority of a supplier agent's costs. This is likely to limit the proportion of costs which are fixed – and therefore the potential economies of scale.

2.35. The extent of any economies of scale (in relation to tasks which are currently automated) may also be limited by:

[29] Response to business case RFI, question 1.02.
[30] NHH supplier agent costs would be unlikely to provide a reasonable guide for the cost categories of supplier agents in future, as they currently have large workforces to carry out pedestrian meter reads.

- The extent to which some IT systems costs are not fixed. For example, any costs which are linked to capacity may be linked to the number of meters served. One supplier agent drew a distinction between operational IT costs (eg processing power, network capacity, database and other product licensing) and development costs. It said that there would be economies of scale for the latter, as this it was a fixed one-off cost with some ongoing maintenance. However, it said that the former set of costs "are typically modular and relatively linear … at the volumes that the new HH market will operate".[31]

- The fact that some current HHDC costs will relate to data retrieval – this will not be relevant for smart meters in future, as these costs will be incurred by the DCC instead.

2.36. Bearing these caveats in mind, it appears that there could be some potential economies of scale for tasks which are already automated. There are currently nine company groups who are qualified as Non Half-Hourly Data Collectors (NHHDCs)/Non Half-Hourly Data Aggregators (NHHDAs)/HHDCs/HHDAs, and a further four who are qualified as NHHDCs/NHHDAs only.[32] In contrast, a central agent could serve the entire market, and therefore could spread fixed costs over more customers.

2.37. However, the number of HH meter points will grow significantly under market-wide HHS. The number of NHH meter points is over 100 times the number of HH meter points. The potential economies of scale from introducing market-wide HHS could therefore be significantly larger than the additional economies of scale from moving from supplier agents to a central agent.

2.38. Table 2 below illustrates how IT systems costs per customer could fall as the number of customers served increases. For reasons of commercial sensitivity, this is a stylised example, with the starting figure for IT systems costs normalised to 1.

[31] Response to business case RFI, questions 1.01 and 1.02.
[32] Based on ELEXON data on qualified persons.
https://www.elexon.co.uk/bsc-and-codes/bsc-signatories-qualified-persons/

Table 2 – Illustration of how IT systems costs could vary with number of meters served

	Illustrative number of meters served per agent	Normalised IT systems cost per customer
Current HH supplier agent	30,408	1.000
Supplier agent under market-wide HHS	2,341,208	0.013
Central agent under market-wide HHS	30,435,707	0.001

Source: Number of meters served based on Ofgem analysis of data from ELEXON.[33] Normalised IT systems cost per customer is calculated based on the number of meters.

2.39. The cost difference between the two models under market-wide HHS would be lower if there was consolidation between supplier agents. This would allow each supplier agent to spread its fixed costs over more customers. To the extent that there are economies of scale, commercial developments within a competitive market could therefore help to find the most efficient solution.

Automation of more tasks

2.40. As part of the RFI, we asked HHDC/HHDAs which tasks they perform on a manual or an automated basis. In broad terms, respondents said that there are a mix of manual and automated tasks. For example, several supplier agents said that validation was automated,[34] whereas two supplier agents said that unmetered data processing was manual (although one supplier agent noted that this was in relation to a low number of meters).[35]

2.41. There appears to be some variation in the degree of automation between supplier agents at present. For example, one supplier agent said that the "vast

[33] ELEXON's Trading Operations Report is the source for the number of meter points on 10 September 2017. ELEXON's data on qualified persons is the source for the number of qualified supplier agents.
The number of meters served by a current HH supplier agent is based on the current number of HH meters, divided by the number of current qualified HHDCs/HHDAs.
The number of meters served by a supplier agent under market-wide HHS is based on the current number of NHH meters and the number of current qualified NHHDCs/NHHDAs. (We use the number of NHHDCs/NHHDAs because these supplier agents may wish to become HH-qualified under market-wide HHS).
The number of meters served by a central agent under market-wide HHS is based on the current number of NHH meters.
[34] Responses to RFI Q9.
[35] Responses to RFI Q9. E-mail.

majority" of HHDC/HHDA tasks are automated.[36] In contrast, another supplier agent gave a detailed list of tasks which includes a large number of manual instances.[37] Where tasks are currently automated by some, but not all, supplier agents, this would suggest that some increased automation is possible without introducing a central agent.

2.42. Some supplier agents provided views on whether there are some tasks which are inherently manual. For example, one supplier agent said that some activities "have an inherent manual component", such as editing data, complex estimation and manual meter reading, and that "the majority of manual effort goes into exception management".[38] Another supplier agent said that "most manual tasks relate to the review of data/information that did not pass the automatic validation and require user review to assess the situation or more specialised less frequent processes".[39]

2.43. However, some supplier agents said that they are already seeking to reduce the amount of manual intervention where possible. For example, one supplier agent said that "only a small proportion require manual intervention and in many cases we have defined change work which will address these areas".[40] Another supplier agent said that "a review of any manually intensive tasks with a view to automate them is also underway as part of a normal business review".[41]

2.44. As an initial attempt to consider the importance of this area, we looked at the highest figure cited by a respondent to our RFI for the proportion of its HHDC/HHDA costs covered by IT systems. This could be seen as a proxy for the degree of automation. Assuming a higher value for systems costs increases the potential economies of scale from spreading these fixed costs over more customers. Even in this case, the potential economies of scale appeared small in absolute terms.

2.45. Beyond this, it is possible that there are some tasks which are not currently automated, but where a central agent might have sufficient scale to invest in new systems. At this stage, we do not know whether this is likely, or which tasks might fall into this category.

Spreading new fixed costs over more customers

2.46. Supplier agents may need to carry out incremental investment to support market-wide HHS. A central agent could therefore avoid duplication of investment. However, if some supplier agents already have suitable systems, then their incremental costs could be lower than the set-up costs for a central agent.[42]

[36] Response to RFI Q9.
[37] Response to RFI Q9.
[38] Response to RFI Q9.
[39] Response to RFI Q9.
[40] Response to RFI Q9.
[41] Response to RFI Q10a.
[42] Although a central agent might not face these costs if an existing supplier agent won the

2.47. We asked supplier agents what changes they would need to make to take on a material number of domestic or small non-domestic HH customers, and what the incremental costs would be. There was a general view from supplier agents that some changes and investment would be required – but the scale varied between them.

- Some suggested that the changes required would be small. For example, one supplier agent said that there would likely be incremental costs related to "hardware, connectivity and database scaling", but it would look to offset these through efficiency.[43]
- Some suggested that changes would be more significant. For example, one supplier agent said that it would re-write its systems to optimise them for the simplified process. It said that some processes would be very similar, while others would be simplified, and others would not be required as they would be performed by the DCC instead.[44]
- Others suggested that they would need to carry out a full system replacement. For example, one supplier agent noted that it does not provide HH agent services at present, and would seek to develop systems from scratch, rather than relying on its NHH system.[45]

2.48. Some supplier agents said that the changes required to take on a material number of domestic or small non-domestic HH customers would be related to capacity.[46] As noted above, capacity costs may scale with the number of customers, and therefore these costs may be incurred in any event, whoever is providing agent functions.

2.49. Based on the information provided in responses, we have started to develop an illustration of the total incremental upfront costs for supplier agents. This tries to take into account the potential variation in costs between different supplier agents. We would like to try and refine this if possible before publishing a precise figure – but our current estimate is in the low tens of millions of pounds.

2.50. At this stage it is not possible to say whether it is plausible to deliver a central agent for a lower upfront cost. However, it is worth noting that any upfront savings would have to be spread over all meters involved in market-wide HHS, as well as across several years – this will limit the size of any annual per customer savings.

role of central agent and was able to reuse its existing systems (at least to some extent).
[43] Response to RFI Q10.
[44] Response to RFI Q10.
[45] Response to RFI Q10.
[46] Response to RFI Q10. Response to RFI Q10.

Summary of initial thinking

2.51. At this stage, our very initial view is that it appears that there may be some economies of scale from a central agent, but these are likely to be fairly small in absolute terms. This is especially because supplier agents would still be achieving some scale themselves – supplier agents under market-wide HHS would still be serving at least a couple of million meter points. If further economies of scale exist, it might be possible to achieve some of these commercially (through consolidation in the number of supplier agents), rather than through a central agent. This means that the incremental economies of scale for a central agent may be fairly small.

Settlement performance

What is the issue?

2.52. We want to understand whether supplier agents differentiate themselves by providing a higher level of settlement performance above the baseline settlement standards set out in the BSC. Intuitively, a central agent may be able to provide a single level of performance, but may be less able to respond to the needs of individual suppliers (or end customers) by providing different commercial offerings. Therefore, if agents provide a range of differentiated service levels, then this could be an argument in favour of maintaining a model with supplier agents.

Current evidence

2.53. Based on RFI responses, performance generally appears to vary between agents and between contracts. This can involve delivering above-standard performance. For example, one supplier agent said contracts often involve going beyond BSC performance levels,[47] whereas another supplier agent told us that it aims for BSC performance as standard, but "some customers/Suppliers contract for performance above minimum mandated levels".[48]

2.54. The sense that performance appears to vary between agents also emerged from analysis of data on HH supplier agent performance. This is summarised in appendix 1. There are strong caveats around this analysis, in particular due to the very limited data available, so we are not placing significant weight on it. However, it does align with the qualitative information received.

2.55. Some supplier agents said that they aim for a higher level of performance for non-settlement purposes. Respondents suggested that better data availability may be valued for purposes such as: billing,[49] forecasting,[50] procurement by TPIs,[51] and

[47] Response to RFI Q11.
[48] Response to RFI Q11.
[49] Response to RFI Q11. Meeting. Response to RFI Q11.
[50] Response to RFI Q11. Response to RFI Q11.
[51] Response to RFI Q11.

energy management by customers.[52] In relation to the latter, one supplier agent told us that data was required by the next day.[53] This is much faster than the first performance standard under the BSC, even for the largest HH sites.

2.56. However, respondents also said that better data availability is used for ensuring compliance[54] and identifying faults.[55] In the NHH market, one supplier agent said that it targets a higher level of performance to allow for contingency for unexpected performance issues.[56] These might be seen as more closely linked to settlement performance.

2.57. Several agents suggested that performance levels contribute to winning contracts.[57] However, we have only seen limited evidence to date. One supplier agent presented a case study of a customer that had switched away, after experiencing service issues including low data performance. It said that the customer had since returned, with "an improved service model" as one of the key reasons it had returned.[58] Another supplier agent told us that it won a customer contract on the basis of higher performance[59] – although the fact that the relevant metric was performance at D+1 might imply that this was at least partly for non-settlement reasons. However, we also heard a view to the contrary.

Looking forward

2.58. In future, supplier agents may be less able to differentiate themselves through settlement performance for DCC-enrolled smart meters.

2.59. First, the smart HHDC would not be responsible for any communications faults, as data retrieval is performed via the DCC. A supplier agent might therefore be less able to guarantee a particular service level.

2.60. Second, in a smart world, a supplier will not be reliant on its agent to obtain data for non-settlement purposes. The supplier will be able to get data itself by making service requests under the SEC.[60] The agent's settlement performance will therefore not necessarily determine the supplier's ability to get data for non-settlement purposes.[61]

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[52] Response to RFI Q11.
[53] Response to RFI Q11.
[54] Response to RFI Q11. Response to RFI Q11.
[55] Response to RFI Q11.
[56] Response to RFI Q11.
[57] Response to RFI Q12. Response to RFI Q12. Response to RFI Q12. Response to RFI Q12.
[58] Presentation.
[59] Response to RFI Q12.
[60] As ever, this would be subject to the consumer's consent.
[61] The supplier agent would only be able to help indirectly – by identifying issues, it might be possible to get others (eg the Meter Operator) resolve these more quickly, allowing both the HHDC and the supplier to regain access to the data.

Summary of initial thinking

2.61. At this stage, the evidence suggests that performance varies to some extent between supplier agents and between contracts. However, we do not know for sure whether differences in the level of performance generally reflect deliberate attempts at differentiation, as opposed to natural fluctuations. Even where differentiation is deliberate, there is some evidence to suggest that suppliers or consumers seek higher levels of performance for non-settlement reasons.

2.62. We have not seen strong evidence to suggest that settlement performance is a particularly important area of differentiation, compared to non-settlement value-added services (which we discuss below).

Value-added services

What is the issue?

2.63. As well as performing the core settlement tasks set out in the BSC, supplier agents also provide other services to suppliers or end customers. We refer to these as 'value-added services'.

2.64. In principle, a central agent would not appear well-suited to providing value-added services itself. Suppliers and customers may want a range of different value-added services; supplier agents operating in a competitive market are likely to be better able to respond to the individual needs of suppliers and customers than a central agent would be.

2.65. We want to understand whether (and how) these value-added services are dependent on performing Data Collection/Data Aggregation, as opposed to simply having access to the relevant data. If these value-added services are dependent on being a Data Collector/Data Aggregator, and therefore introducing a central agent would lead to a loss of value-added services, this would be an argument in favour of maintaining the current supplier agent model.

Current evidence

What value-added services do supplier agents provide?

2.66. Evidence from the RFI and desk research shows that supplier agents provide a range of different value-added services.

2.67. The most frequently cited value-added service in the RFI was **data reporting or visualisation**.[62] This also appeared to be provided by all current HHDC/HHDAs

[62] Responses to RFI Q13.

based on our desk research. RFI information showed that this reporting can be targeted at suppliers,[63] or provided direct to consumers.[64] Most supplier agents also provided alerts for high consumption, as well as reporting.

2.68. Data reporting or visualisation services can be differentiated. For example, one supplier agent said that its application for suppliers and consumers has several versions "that introduce ever more complex functionality for a higher fee".[65] Another supplier agent said that "customers want markedly different things out of their software". It gave the example of a bespoke reporting application it had produced for a waste management company.[66]

2.69. Supplier agents also said that they provide **rapid access to data**.[67] For example, one supplier agent said that faster data (including real-time data) can be used for energy management and forecasting.[68]

2.70. Several supplier agents said they provide **exception resolution**.[69] This can be a value-added service where an agent proactively goes beyond its BSC requirements to help address exceptions. For example, one supplier agent said that the majority of its value-added services were linked to "data quality and exception resolution assistance".[70] It said it asks the Meter Operator for updates on requests for metering system investigations[71] where it has not received an update in the last week. Our desk research also found several supplier agents mentioning issue/fault resolution.

2.71. Some respondents said that supplier agents can provide **help to small suppliers**. For example, one industry systems provider said that supplier agents provide invoice validation, and that niche services are often valued by small suppliers.[72] One supplier agent told us that it provides a choice of additional services to independent suppliers (eg different reporting options to help a supplier understand its portfolio). It also said that it provides a personal service, where suppliers have someone they can discuss issues with.[73] However, one supplier told us that a central agent could help small suppliers – it said that "with the many new suppliers entering

[63] For example, one supplier agent said that it provides "bespoke reporting suites as agreed with our suppliers". Response to RFI Q13.
[64] For example, one supplier agent said that it provides data on a portal or over an FTP to customers. Response to RFI Q13.
[65] Response to RFI Q13.
[66] Response to RFI Q13
[67] Responses to RFI Q13.
[68] Response to RFI Q13.
[69] Responses to RFI Q13.
[70] Response to RFI Q13.
[71] D0001 – Request Metering System Investigation.
[72] Response to RFI Q16.
[73] Call.

the market, the value of having a central knowledge base and query manager for DC/DA issues will be invaluable".[74]

2.72. Other value-added services are also linked to expertise. One supplier agent mentioned its **advisory services** in relation to regulation and energy management,[75] while another supplier agent said that it provides "education sessions to energy suppliers on understanding of the processes and exception management".[76] An integrated supplier agent said that its in-house supplier agent provides support to the wider business – particularly on forecasting and customer billing.[77]

2.73. Value-added services also relate to **metering and field services**. Sub-metering[78] is a non-settlement role – two supplier agents mentioned this service.[79] Our desk research also identified supplier agents mentioning Feed-in Tariff generation metering. One supplier agent listed a number of value-added services which involve field visits – for example, to resolve non communicating meters, or empty property checks.[80] Another supplier agent also noted its expertise in providing field services to energy customers in the water sector, including dealing with issues such as remote sites requiring 4x4 vehicles.[81]

2.74. Other value-added services identified through our desk research included: cross-utility services, energy efficiency services, electric vehicle charging and shared access to the DCC.

2.75. Value-added services may also evolve in future. One supplier agent mentioned potential future value-added services for suppliers to provide support on Time of Use tariffs.[82] This would require consumer consent to use HH consumption data for this purpose.

2.76. Based on desk research, similar value-added services (to those provided by supplier agents) appear to be provided by third parties who are not currently supplier agents. We did not identify any value-added services provided by supplier agents which do not appear to be provided by at least one third party.

[74] Response to RFI.
[75] Response to RFI Q13.
[76] Response to RFI Q13.
[77] Response to RFI Q13.
[78] Sub-metering is when there are meters on a site which sit behind a settlement meter. For example, a business customer might want to understand how much electricity it is consuming for different processes.
[79] Responses to RFI Q13.
[80] Response to RFI Q13.
[81] Response to RFI Q13.
[82] Response to RFI Q13.

Requirements for providing value-added services

2.77. Access to data appears to be a clear prerequisite for value-added services. This may require certain parameters to be met – these could include the speed, cost, and reliability of data access.

2.78. Acting as a supplier agent may be one way of ensuring suitable access to data. For example, one supplier agent said that control of Data Collection is important for providing data quickly (ie faster than BSC timescales).[83] However, there may be alternative ways of collecting data. This is especially the case for DCC-enrolled smart meters, where multiple parties can make service requests for consumption data.

2.79. As long as data is available (including necessary consent from consumers), it appears theoretically possible to provide value-added services separately from acting as a Data Collector/Data Aggregator. Several supplier agents said that, if data was available, they might be able to provide value-added services without also being a Data Collector/Data Aggregator.[84] Some agents said that value-added services could not be provided separately, or would be difficult to provide separately, due to the links to their settlement systems.[85] However, at this stage, we have not seen clear evidence why there would be an absolute barrier to providing value-added services separately.

2.80. There are questions about whether there are cost savings or other synergies from providing value-added services alongside being a Data Collector/Data Aggregator.

2.81. Several agents said that there would be higher costs for providing value-added services on a standalone basis.[86] Supplier agents said that value-added services share resources with Data Collection/Data Aggregation – one agent cited its platform[87] and while another cited its field force.[88] One supplier agent also said that there would be costs of obtaining data (assuming access was provided).[89] However, the answer may vary between services – another supplier agent said that there were no cost savings from providing a data warehouse and data reporting alongside being a Data Collector/Data Aggregator.[90]

[83] Response to RFI Q14.
[84] Response to RFI Q14b. Response to RFI Q14b. Response to RFI Q14b. Response to RFI Q14.
[85] Response to RFI Q14. Response to RFI Q14.
[86] Eg response to RFI Q14.
[87] Response to RFI Q14.
[88] Response to RFI Q14a.
[89] Response to RFI Q14.
[90] Response to RFI Q14a.

2.82. Supplier agents also said that there were synergies due to expertise.[91] For example, one supplier agent said: "we understand the processes, where they break down and what is required from other parties to resolve the issues".[92]

2.83. We also received a suggestion that there are commercial reasons why products have to be provided as a bundle. One supplier agent told us that it may be less efficient to provide value-added services as an independent charge (eg having to issue standalone invoices, or incurring the same customer acquisition costs for a smaller revenue opportunity).[93] It said "it is not clear that a distinct market will develop for standalone analytics services".[94] It appears plausible that any such costs of contracting separately could slightly reduce the number of suppliers or customers purchasing value-added services. However, we would not expect this effect to be significant if these services deliver sufficient value to those purchasing them.

Summary of initial thinking

2.84. Supplier agents clearly provide a range of value-added services. At this stage, it does not appear that value-added services are dependent on acting as a Data Collector/Data Aggregator, provided that parties have the data they need. However, there are questions about whether it would be more expensive to provide value-added services on a standalone basis. We discuss the open questions on value-added services further in chapter three.

Implementing industry changes

What is the issue?

2.85. Implementing code changes can require action by supplier agents – for example to implement new data flows. As part of our wider drive to make industry codes more responsive to strategic change,[95] it is worth thinking about which model best allows changes to be implemented at pace.

2.86. In principle, there could be reasons why either supplier agents or a central agent could be most efficient at delivering industry changes. Having a central agent would mean that only one system needed to be adapted to implement a modification – this could be quicker than changing the systems of several supplier agents. There could be greater flexibility if changes could be implemented by extracting new groupings of data from a central agent's system, rather than transferring new

[91] Response to RFI Q14b. Response to RFI Q14a.
[92] Response to RFI Q14a.
[93] Meeting. E-mail.
[94] E-mail.
[95] See, for example: Ofgem (2017) Code Governance Remedies: working paper on Consultative Board and strategic direction. https://www.ofgem.gov.uk/system/files/docs/2018/01/code_governance_remedies_working_paper_for_industry_workshops_q4_2017.pdf

information between parties. However, there is a risk that a monopoly central agent might become inefficient and slow-moving.

Current evidence

Timing of previous changes

2.87. We carried out desk research on the timing of certain recent industry changes.[96] We have seen limited evidence of supplier agents holding up the speed of industry changes.

2.88. Even if the Data Collector and Data Aggregator roles were centralised, there would still be multiple suppliers, DNOs and Meter Operators in the market. The speed of change would therefore have to take into account the ability of these parties to change their systems. These parties appear to have previously constrained the speed of change in certain cases. For example, based on our review of public papers on industry changes, suppliers appear to have been responsible for the delay to the implementation of P272, and at least partly responsible for the length of the implementation period for the smart Change of Supplier modification.[97]

2.89. Existing central systems can also sometimes limit the potential for delivery at pace. For example, the volume of central systems changes meant that it was not possible to implement the BSC modifications related to embedded benefits in the November 2017 BSC Release – though this did not have a practical impact as the charging year does not start until April.

2.90. Supplier agents have shown some ability to move faster than the timescales they originally stated were possible. In particular, the Electricity Balancing Significant Code Review changes[98] were implemented in seven months, despite supplier agents suggesting that 12 months was required.

2.91. Change also can take place slowly in the gas market, where the equivalent roles to Data Collector and Data Aggregator are centralised – the key example is Project Nexus.[99] This indicates that a central agent does not ensure speedy implementation of changes.

[96] The first set of changes reviewed were those related to P272 (P272 itself, as well as BSC modification P300, DCUSA change proposal DCP179, and CUSC modification proposal CMP241). The second set related to elective HHS (BSC modification P339, BSC change proposals CP1469 and CP1474, and DTC change proposal CP3496). The third set was made up of the BSC modifications related to: embedded benefits (P348/349), the Electricity Balancing Significant Code Review (P305) and smart Change of Supplier (P302).
[97] P302 – Improve the Change of Supplier Meter read and Settlement process for smart Meters
[98] P305 - Electricity Balancing Significant Code Review Developments
[99] Project Nexus was the industry programme to implement changes to the gas settlement arrangements and replace Xoserve's ageing UK Link IT system that was introduced in the 1990s. We took on sponsorship of the project in 2016, following a series of delays to the

2.92. We also looked at industry change through the RFI. Respondents generally said that the current process is satisfactory[100] or that supplier agents do not have a negative impact on the speed of industry change.[101] When asked, one integrated supplier agent said the speed of change is largely dictated by industry as a whole, and is influenced by the overall volume of change in the industry.[102] However, another integrated supplier agent said that the number of supplier agents in the market can increase lead times for testing.[103] In response to a follow-up question, one integrated supplier agent said that the main example was P272[104] "for which distributor and agent system/process changes were a delaying factor".[105] We note that this refers to DNOs as well as supplier agents.

2.93. Many respondents said that supplier agents bring expertise to the change process, or help to improve changes through assessment and/or testing.[106] For example, one supplier agent said that supplier agents have practical knowledge and understand the need to plan for exceptions outside the scope of code documentation.[107] Another supplier agent told us that supplier agents provide a more consumer-focussed perspective.[108]

2.94. Supplier agents also highlighted their record of delivering change. For example, one supplier agent noted that it has delivered 38 changes over the past two years.[109] Another supplier agent said that supplier agents are subject to compliance obligations and contractual penalties which help ensure timely delivery.[110]

2.95. Some standalone supplier agents told us that they had a limited ability to affect the speed of change, and that other parties who are represented on industry boards or panels can influence the speed of change more.[111] However, one integrated supplier agent said that supplier agents "have the ability to support or reject solutions and implementation dates according to their commercial interests".[112]

project. For more information see: https://www.ofgem.gov.uk/gas/retail-market/market-review-and-reform/project-nexus. Project Nexus was implemented successfully on 1 June 2017.

[100] Responses to RFI Q15.
[101] Responses to RFI Q15.
[102] Call.
[103] Response to RFI Q15.
[104] P272 – Mandatory Half Hourly Settlement for Profile Classes 5-8
[105] Response to follow-up question.
[106] Responses to RFI Q15.
[107] Response to RFI Q15.
[108] E-mail.
[109] Response to RFI Q15.
[110] Response to RFI Q15.
[111] Responses to RFI Q15.
[112] Response to RFI Q15.

Innovation and future settlement data needs

2.96. There are a range of potential future changes which may require consumption data to be available in new formats (eg subdivided by a new piece of information). When considering this, it is important to distinguish between individual modifications and cumulative change.

- On an **individual** basis, it should be possible to implement new data requirements under either a supplier agent or a central agent model. For example, if local supply arrangements required more granular information about a meter's location,[113] it would be possible to amend industry data flows and parties' systems accordingly. At this stage, we have not identified any individual potential changes which could only be delivered by a central agent.

- However, on a **cumulative** basis, there may be a question about how easily a series of future changes can be implemented. This is in a context where there are a growing number of market participants and different business models, as well as an increasingly dynamic and changing market. In a central agent model (where settlement data is stored in a single location), the technical process for getting a new grouping of data could be as simple as writing a new query for the central database, rather than needing to change data flows and the systems of multiple parties.[114] This would depend on the central agent already having access to all the required information – otherwise the central agent would still be reliant on getting new data items from other parties before a change could be implemented. Any greater flexibility in industry systems from a central agent could be seen as an enabling measure for a range of potential future changes, allowing these to be introduced more quickly and cheaply. This may sit alongside other enabling measures, such as code governance reform.

2.97. We do not know precisely what changes may be proposed in future – and any changes would need to be assessed on their own merits. However, we can illustrate some of the potential changes which may be raised. The examples below draw on an ELEXON table for the Design Working Group showing types of firms who might seek new cuts of settlement data,[115] as well as issues being considered by current Ofgem work.

[113] Currently location is only represented at GSP Group level in the aggregated information submitted to the BSC's SVAA systems.
[114] Any changes would still need to proceed through a suitable governance process (eg including consultation).
[115] ELEXON, DWG 01/04: Settlement roles and responsibilities. https://www.elexon.co.uk/wp-content/uploads/2018/01/DWG01_04_Market_Wide_HHS_Settlement_Roles_Responsibilities_v1.0.pdf

2.98. As mentioned above, **local energy schemes** may need more granular information about a meter's location on the network. If a central agent had full information from the start, then it could develop new aggregations as required.

2.99. Our project on **access and forward-looking charging** is considering a range of potential changes. Work in this area is at an early stage, and so we do not know what future data might be required. However, we published a working paper in November 2017.[116] This highlighted that there are a number of 'building blocks' to consider for both access rights and forward-looking access charges. These include both temporal and geographical aspects. For example, we noted that access rights could be defined with greater locational granularity – eg within a given area or at a particular voltage level.[117]

2.100. In future, it is possible that a customer may have **more than one supplier** (or party providing energy services). This possibility was highlighted in our recent call for evidence on the 'supplier hub' arrangements.[118] The current settlement process associates each meter point with one supplier,[119] and the supplier is responsible for appointing supplier agents. A central agent could be one way of mitigating any concerns about providing access to consumption data for multiple parties – but there are other possibilities. (We discuss this further from paragraph 3.12 below).

Potential issues with a central agent delivering change

2.101. Even if a central agent could deliver greater flexibility in theory, there is a question about whether this could be achieved in practice. For example, if the contractual arrangements for a central agent delivered a particular specification at a fixed price, then any changes could be costly.

2.102. We received a few comments about issues with making changes to current central systems. One supplier agent cited the Supplier Volume Allocation Agent (SVAA)[120] implementation of the Data Transfer Catalogue change accompanying

[116] Ofgem (2017), Reform of electricity network access and forward-looking charges: a working paper.
https://www.ofgem.gov.uk/system/files/docs/2017/11/reform_of_electricity_network_access_and_forward-looking_charges_-_a_working_paper.pdf
[117] Ofgem (2017), Reform of electricity network access and forward-looking charges: a working paper, paragraph 2.17.
https://www.ofgem.gov.uk/system/files/docs/2017/11/reform_of_electricity_network_access_and_forward-looking_charges_-_a_working_paper.pdf
[118] Ofgem (2017), Future supply market arrangements – call for evidence
https://www.ofgem.gov.uk/system/files/docs/2017/11/future_supply_market_arrangements_-_call_for_evidence.pdf
[119] There is an exception in the larger HH market, where there is a process available for allocating energy between multiple suppliers. (See BSCP 550 – SVA shared meter arrangements for half hourly impact and export active energy). However, we understand this is rarely used.
[120] The SVAA is one of the agents appointed under the BSC to run the central settlement systems.

P300.[121] It said that the SVAA was unable to process the revised data flow and did not communicate this until five days after the implementation date. Another supplier agent said that it had needed to advise ELEXON's provider on changes related to P305[122] in order to correct coding errors.[123] ELEXON told us that the two issues cited were related to HHDA implementation issues or central provision of software and not issues with changes to central systems.[124]

2.103. Agents also highlighted the costs of making changes to central systems, including the DCC. For example, one supplier agent cited the 'unexpectedly extremely elevated' costs raised by DCC in SEC impact assessments.[125] In response to follow-up questions, it mentioned several modifications. One was SECMP0007, which had a total estimated implementation cost of around £7.3m to £8.2m.[126] The supplier agent also noted that the fixed price cost for a full DCC impact assessment is £346,442. In relation to the DCC, another supplier agent also mentioned "the very high costs they are charging for nominally straightforward changes".[127]

2.104. Some respondents also noted potential issues with a central agent. One integrated supplier agent said that there was a question about how fast a central provider could deliver changes.[128] Another integrated supplier agent said that the impact of a central agent "could be impacted by the effectiveness of the contractual arrangements and surrounding governance structure".[129] We are also aware that a central agent could also provide a single point of failure, including when implementing changes.

Summary of initial thinking

2.105. At this stage, we have not seen evidence that supplier agents are currently a particular source of delays to industry changes, at least relative to other parties. This is separate to the question of whether there is room for improvement in the speed at which the industry as a whole delivers change.

2.106. We have also not identified specific potential future changes which would require a central agent to deliver them. However, noting the volume of potential changes that may be required in future, we think there is still an open question about whether or not a central agent could help to deliver change more quickly and

[121] Response to RFI Q15. P300 – Introduction of new Measurement Classes to support Half Hourly DCUSA Tariff Changes (DCP179). The DTC change was DTC CP3453 – Changes to existing DTC flows to support new Measurement Classes under P300.
[122] P305 - Electricity Balancing Significant Code Review Developments.
[123] Response to RFI Q15.
[124] E-mail.
[125] Response to RFI Q15.
[126] SECMP0007 – Firmware updates to IHDs and PPMIDs. Response to follow-up questions.
[127] Response to RFI Q10.
[128] Response to RFI Q15.
[129] Response to RFI Q15.

easily. This would be an enabling measure, rather than to deliver any one specific change. We discuss this further in chapter three.

3. Open questions

Chapter Summary

We set out the key open issues, based on our analysis to date.

3.1. Our work is still at an initial stage, and we have not reached any conclusions. However, of the areas we have considered to date, there are three where we have further questions. We intend to focus on these areas over the next few months – although we may not reach definite answers in this period.

Economies of scale

3.2. We have an initial understanding of some of the current costs of supplier agents. We would like to develop this further, building on our previous RFI.

3.3. In particular, we would like to explore whether we can obtain a more detailed understanding of supplier agents' costs. We would need to understand which costs are fixed and variable. We would also need to consider whether each cost item would be required in future (eg given that data will be retrieved via the DCC).

3.4. We are interested in understanding whether there is a difference in the level of automation possible for a central agent and a supplier agent in future. If there were tasks which are not currently automated, but where a central agent might have sufficient scale to invest in new systems, this could create potential cost savings for a central agent. At this stage, we do not have evidence on this point.

3.5. We recognise that supplier agents will be unable to provide precise estimates of the costs they would incur to deliver market-wide HHS, until there is more clarity on the potential TOM design. However, this remains an area where we would welcome further information where possible.

3.6. We would like to start to develop an initial view of the potential costs of setting up and running a central agent. We are interested in any experience from other sectors or markets which could inform our consideration of the costs of a central agent.

Value-added services

3.7. At this stage, we do not have detailed evidence to evaluate the submissions from supplier agents about synergies between being a supplier agent and providing value-added services.

3.8. We would like to develop a reasonably granular understanding of supplier agents' current settlement processes to understand which steps would be required to provide value-added services, even if a firm was not acting as a supplier agent. This

might shed light on whether there are cost synergies. We recognise that some of the steps required may vary between value-added services.

3.9. Supplier agents also suggested that there could be synergies in terms of expertise. It is not currently clear whether introducing a central agent would necessarily mean current supplier agents losing expertise, or whether this would depend on its scope. For example, if the central agent was only responsible for identifying exceptions using an automated system, there might still be a role for parties to use expertise to help suppliers to resolve exceptions.

3.10. There is also an open question about whether domestic and smaller non-domestic consumers with smart meters will be as interested in value-added services as existing HH consumers with higher levels of energy spending. We recognise that it is hard to predict what types of products might become relevant to consumers in future – but we welcome any thoughts in this area.

Consumption data

3.11. Providing value-added services is contingent on access to data (with consumers' consent). Some value-added services may specifically need access to validated consumption data, as opposed to being able to access consumption data in another way. (For example, it would be possible to access data direct from the meter via the DCC. A firm could do this by becoming an Other User under the SEC, although there would be costs associated with this). We are aware of comments from the DWG that raw (unvalidated) data is not useful.[130] We welcome evidence on this point.

3.12. If this is true, however, we will need to consider the question of a level playing field between all parties in terms of access to this validated consumption data, whether or not they are acting as agents. It would be undesirable if one type of party was able to restrict access to data, preventing consumers from accessing services from other parties.[131]

3.13. If action is necessary to provide access to validated consumption data, there could be different ways of achieving it.

- Under a central agent model, there would need to be requirements on how the central agent shares data with other parties (eg in terms of speed, and maintaining customer consent). If the central agent was also

[130] Third DWG meeting.

[131] Where a consumer contracts directly with a supplier agent, it would theoretically be possible for the consumer to take the provision of data into account when selecting a supplier agent. (Ie, if the consumer wants other parties to have access to its validated consumption data, it could select a supplier agent which offers this service). However, domestic consumers and smaller businesses may not want to contract directly with supplier agents, and we currently do not think it would be reasonable to expect them to do so just in order to access value-added services from a third party.

prohibited from providing value-added services, then this would ensure that it did not have a commercial incentive to frustrate access to data by other parties.

- Under a supplier agent model, we would also need to consider whether supplier agents should be subject to new requirements on how they share data with other parties. Among other issues, we would need to consider whether these requirements could be flexible over time for example in a new market structure not based around the supplier hub model.

- Alternatively, it has been suggested that supplier agents could send a copy of consumption data to a separate database. This would provide an overarching view of the market – but it would only be as flexible as the data provided to it. Third parties could then make requests for new groupings of data from this database, though it would not appear possible that any data from this source could be used in settlement, without making ongoing changes to central systems every time that a new grouping was requested. The alternative would be to design a central system that used fully-disaggregated data, so as to be futureproof – but this would raise the question of why a separate database was required.

3.14. In any case, access to HH consumption data by third parties would remain subject to a consumer's consent. Data security is also very important. There could be options to mitigate any data security risks of a single database – eg only including data which has been requested (eg from areas with a local supply scheme), rather than data covering the entire market. It would also be necessary to ensure that any approach was compliant with the General Data Protection Regulation (GDPR) which is likely to apply to domestic and microbusiness level consumption data.

Implementing industry changes

3.15. We intend to develop our understanding of possible future changes to industry codes, and what consumption data they might require to deliver them. For example, this would help us to understand whether or not there are potential benefits from a central Data Aggregator in terms of making it easier to get new aggregations of data to deliver industry changes. This might indicate whether there could be merit to centralising Data Aggregation but not Data Collection.

3.16. There also is an open question about the extent to which future developments will require access to the validated settlement data. This may vary between changes. Developments which require changes to network charging (eg local supply) or allocation of wholesale volumes (eg Demand-Side Response aggregators) may need access to settlement data. However, other innovations may not necessarily need access to settlement data (eg new types of Third Party Intermediaries) – although these innovations might still want to access validated data with the customer's consent.

3.17. We note the arguments about the costs of changing existing central systems. Eventually, we would need to consider whether any theoretical advantages of a central agent would be outweighed by higher implementation costs in practice. There is a standard issue of asymmetry of information with a monopoly provider which can make it difficult for a regulator to understand the actual cost of delivering a particular service (eg making system changes to deliver a code modification).

Other areas

3.18. In our initial work, we have focussed on whether or not a central agent could have merit in principle. We recognise that there are a wider range of issues that we have not considered to date. This is because they would be irrelevant if we concluded that a central agent did not have merit in principle.

3.19. One important set of issues would be related to the practicalities of putting a central agent in place, for example the process for procuring a central agent. It would also cover the requirements for providing sufficient oversight on an ongoing basis. This would be needed to ensure that any central agent was delivering good outcomes in terms of cost and quality.

3.20. We would also need to carry out a detailed assessment of the legal issues related to any decision on whether or not to introduce a central agent.

4. Next steps

Chapter Summary

We set out our forward process. We also describe the principles we will use to assess this issue.

Forward process

4.1. We are publishing this working paper to update you on our thinking to date. We hope that this helps to provide some useful transparency. We also see this as an opportunity to test our thinking with you and prompt you to provide further evidence where possible. As set out above, our analysis is ongoing, and so our thinking is subject to change.

4.2. Given the stage of our work, this is not a consultation document, and so we are not requesting formal responses. However, we would be very keen to receive any comments. If you have any views or evidence, please contact us at: half-hourlysettlement@ofgem.gov.uk. We would be happy to arrange a meeting or teleconference, or to take comments by e-mail.

4.3. Unless you mark any comments as confidential, we may seek to include anonymised information as part of any subsequent publications. You can ask us to keep your comments confidential, and we'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004. If you want us to keep your comments confidential, you should clearly mark your response to that effect and include reasons. If you are including any confidential material, please put it in the appendices. If the information you give in your comments contains personal data under the Data Protection Act 1998, the Gas and Electricity Markets Authority will be the data controller. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000.

4.4. Over the next few months, we will continue to consider the open issues set out in chapter 3. In parallel, we will continue to progress the other workstreams within the market-wide HHS project, and ELEXON will continue to work with the DWG on the TOM options. We will keep considering the interactions between this workstream and the others.

4.5. We next intend to issue an update on this workstream in Summer 2018, following our further work. At that point, we will assess whether we need to gather further information, or whether we are in a position to consult. In any event, we would consult before making a decision on whether or not to centralise functions currently performed by supplier agents.

Assessment principles

4.6. When we publish a consultation document, we intend to use a set of principles to help structure our assessment. We have listed these principles in Table 3 below, and explained briefly why we think these are important.

4.7. The principles are not intended to be exhaustive. Any decision will need to be compatible with our full statutory framework. By the time of the consultation document, we may also consider that new or amended principles are required in light of developments (eg on other Ofgem projects). We will also consider any comments we receive on these principles.

4.8. We recognise that there may be trade-offs between some of the principles. Ultimately, we will need to apply judgement when reaching a decision, rather than applying these principles mechanistically. However, we still think that publishing principles is the right approach, as it provides transparency on the main criteria we plan to use.

Table 3 – Assessment principles

Principle	Rationale
Carefully considering alignment with our regulatory stances, particularly on competition and innovation[132]	Our regulatory stances are an important way in which we help to deliver policy in the interests of consumers. We think that the principles on competition and innovation are the most relevant to this workstream.
Delivering settlement functions efficiently	Settlement functions affect all consumers. It is therefore important to consider how these can be delivered to a suitable standard and at a low cost.
Supporting the realisation of consumer benefits in a future market	The energy market is changing. We want consumers to be able to benefit from this (eg through new types of products). We want agent functions to enable this future where possible, and we want to avoid them creating barriers (eg in terms of any one type of party being able to withhold access to settlement data, if this is important to other parties).

[132] Ofgem (2016) Ofgem's regulatory stances. https://www.ofgem.gov.uk/system/files/docs/2016/12/ofg930_ofgems_regulatory_stances_document_web.pdf
The specific regulatory stances in relation to competition and innovation are: "Promoting effective competition to deliver for consumers" and "Supporting innovation in technologies and business models".

Principle	Rationale
Limiting unintended consequences	Our immediate focus is HHS for domestic and smaller non-domestic customers. However, we recognise that any decision could have wider implications (for other types of consumers or other non-settlement services). We will need to understand and consider such impacts carefully.
Flexibility in adapting to an uncertain future	There is uncertainty about what the market will look like, both in the near-term and the long-term. We will need to consider which model is best-placed to adapt to changing circumstances, and the value of such flexibility.
Complying with legal requirements	Any decision will need to take into account all relevant legal requirements.

Appendices

Appendix 1 – Data on supplier agent performance

Data

1.1. We explored whether ELEXON held data which could be used to investigate levels of performance by agents. For this initial analysis, ELEXON was able to provide very limited data in relation to the proportion of energy settled on actual readings for HHDAs. We note significant caveats with this initial analysis:

- The amount of data is very limited, covering only three months. There was limited data easily available because ELEXON generally analyses performance by supplier, rather than by supplier agent. This means that transitory issues during the snapshot period may affect the picture presented.
- A number of factors can contribute to overall performance, some of which will not be within the control of a given agent. For example, a Data Aggregator might have a low level of performance, but this could be due to metering faults, which could be the responsibility of a different agent acting as the Meter Operator. ELEXON also told us that good performance by a Data Collector could involve identifying data as invalid, which might reduce the proportion of energy settled on actual readings.[133] We accept that it will not always be the agent's fault if there is an issue – however, there may be some room for agents to push for issues to be resolved, through proactive management.
- The data is largely before the introduction of HHS for medium and larger business customers who were previously in profile classes 5-8.[134] It therefore relates to the larger sites that were traditionally settled HH. It therefore may not necessarily be relevant to the smaller sites that are the focus for our work on market-wide HHS – for example, these will largely have smart meters, rather than traditional HH metering.
- The raw data was based on two different data flows.[135] For one HHDA, there was information from both flows. This means that there are two separate entries for this HHDA.[136] We therefore have ten entries in total, whereas there are nine HHDAs.

[133] Meeting.
[134] The transition period for the implementation of HHS for meters in profile classes 5-8 was defined by BSC Modification P322 - Revised Implementation Arrangements for Mandatory Half Hourly Settlement for Profile Classes 5-8. The transition started on 5 November 2015.
[135] D0040 – Aggregated Half Hour Data File. D0298 – BM Unit Aggregated Half Hour Data File.
[136] It was not possible to combine the raw data, because it was provided as proportions.

Results – performance by HHDA

1.2. With these caveats in mind, the table below shows performance by HHDA. We constructed this by looking at the proportion of HH energy settled on actual readings for each settlement day. We then took the average, 5th percentile, and 95th percentile figures across the period covered by the data (a three month period in late 2015).

Table A1 – Statistics in relation to daily figures for the proportion of HH energy settled based on actual readings by HHDA at SF – settlement days covering a three month period in late 2015

HHDA	1	2	3	4	5	6	7	8	9	10
5th percentile	88.3%	90.0%	95.5%	96.1%	96.9%	93.5%	98.4%	97.0%	97.6%	97.7%
Average	92.8%	92.9%	97.6%	97.6%	98.1%	98.6%	98.7%	98.8%	99.0%	99.3%
95th percentile	96.9%	95.5%	98.3%	98.7%	99.1%	99.8%	99.1%	99.4%	99.7%	99.6%

Source: Ofgem analysis of data from ELEXON. Data anonymised and sorted in order of average performance. The reference numbers for each HHDA (eg HHDA1) are specific to this table only, and do not correspond to those used elsewhere in this appendix.

1.3. The performance standard for traditional HH sites is 99% at the SF settlement run. This is calculated as an average over a calendar month.[137] While this is not precisely the same as our calculations above, we can use this as an approximate benchmark to make the following observations:

- Only two out of ten HHDA entries had an average level of performance which was at or above the applicable standard. (Four further HHDAs had an average level of performance which was less than one percentage point away from the standard). This suggests a limited level of compliance with the level of settlement performance set out in the BSC.
- One HHDA was above the applicable standard, with an average level of performance of 99.3%. This could be a result of seeking to differentiate itself by providing a higher level of settlement performance, but any effect may be small.
- We can use the 5th percentile of performance for individual settlement days as a proxy for the reliability of HHDAs. No HHDAs were above the applicable standard for their 5th percentile day. However, the 5th percentile results ranged from 88.3% to 98.4%. This range could make it plausible that HHDAs differentiate themselves through reliability.

[137] BSC, Section S-1, paragraph 2.2.4.

Results – HHDA performance split by supplier

1.4. The data above may shed some light on differentiation in performance between HHDAs. In a competitive market, it is also plausible that individual HHDAs could offer a menu of different performance levels as options for suppliers or end consumers – ie differentiation within HHDAs. Using the data available from ELEXON, we can try to proxy this by looking at settlement performance by HHDA and supplier.

1.5. It is worth re-emphasising the limitations of the data available. These are magnified when we break the data down by supplier. For example, performance could only relate to a handful of meters, particularly when the HHDA is appointed by certain customers (rather than by the supplier). Where a particular combination of HHDA and supplier relates to a small number of meters, this could make it more likely that performance could be very high or very low. This makes it harder to draw conclusions from the data.

1.6. The table below shows a summary of performance by HHDA and supplier. We started with the proportion of energy settled based on actual readings at the SF settlement run, for each combination of HHDA and supplier. We then took the average daily performance across the period covered by the data, for each combination of HHDA and supplier. The second column of the table below shows the number of suppliers where the HHDA's performance was above the 99% standard.[138] The third column shows this as a percentage of the total number of suppliers served by that HHDA.

Table A2 - Statistics related to the average of the daily proportion of HH energy settled based on actual readings – by HHDA and supplier – at SF – settlement days covering a three month period in late 2015

HHDA	Number of suppliers for whom performance above standard	Percentage of suppliers for whom performance above standard
1	<10	17%
2	<10	33%
3	<10	33%
4	<10	50%
5	<10	50%
6	<10	57%
7	≥10	60%
8	<10	60%
9	≥10	71%
10	≥10	76%

Source: Ofgem analysis of data from ELEXON. Data anonymised and sorted in order of percentage of suppliers for whom performance above standard. Number of suppliers

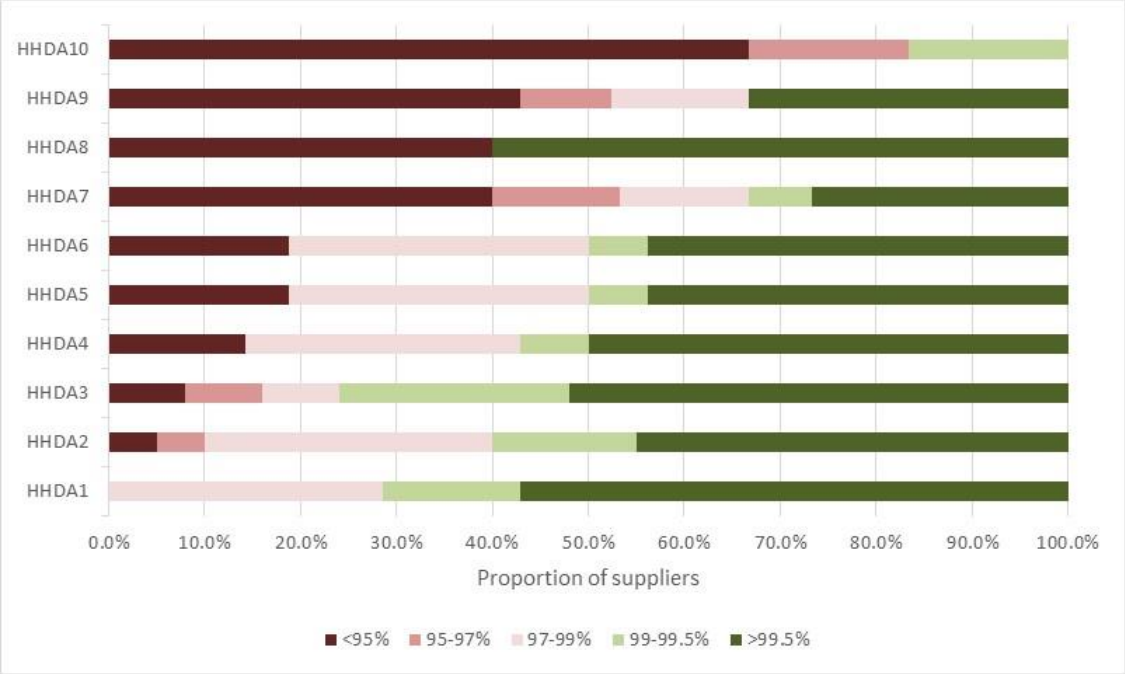
[138] As noted above, the applicable BSC performance standard is calculated as an average over a month. However, we are still able to use the 99% standard as a benchmark.

expressed as a range, rather than exact values. The reference numbers for each HHDA (eg HHDA1) are specific to this table only, and do not correspond to those used elsewhere in this appendix.

1.7. There were differences between HHDAs in the proportion of suppliers for whom the HHDA's average performance was above the 99% standard. This ranged between 17% and 76%. However, it is possible that this range may partly reflect differences in the number of suppliers for whom a HHDA was appointed. HHDAs who only served a small number of customers with a given supplier may be more likely to have above-standard performance (eg 100%).

1.8. We can also look at whether HHDAs were just above the 99% standard, or significantly above it for particular suppliers. The chart below looks at this. (Light green shading shows cases where performance was just above 99%, while dark green shading shows performance above 99.5%. Red shading indicates performance below 99%).

Figure A1 – HHDA performance by supplier - percentage of energy settled on actual readings – at SF – covering a three month period in late 2015



Source: Ofgem analysis of data from ELEXON. Bars represent HHDAs, but have been anonymised. Sorted in order of percentage of suppliers where performance below 95%. The reference numbers for each HHDA (eg HHDA1) are specific to this figure only, and do not correspond to those used elsewhere in this appendix.

1.9. If HHDAs were simply trying to meet the BSC standards, we might expect to see performance just above the standard (light green shading), but not necessarily performance significantly above it (dark green shading). The chart does not show this pattern – for most HHDAs, the dark green category is larger than the light green

one. However, we cannot infer that performance significantly above the standard necessarily implies that a HHDA was actively seeking to differentiate its levels of performance between suppliers. This could just reflect natural variations in performance. As noted above, high levels of performance could also be achieved where there is a small number of customers for a particular combination of HHDA and supplier.