

Discussion paper for electricity settlement expert group – options for Data Processing (DP) and Data Aggregation (DA)

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Audience: Electricity settlement expert group and other interested stakeholders

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1. Purpose of the paper

1.01 As part of the Smarter Markets Programme, Ofgem has convened an expert group to support its work to examine how consumers can be settled against their half-hourly (HH) data from smart and advanced meters. This paper sets out Ofgem's initial views on the options for who should undertake the DP and DA functions for discussion at the expert group meeting on 31 July.

1.02 We are seeking views from the expert group on the following questions:

- Do you agree with what we are looking at and why (see sections 3 and 4)?
- Have we considered the right options and design considerations? Are there other options and/or design considerations which should be considered (see section 5)?
- Are there links to other market arrangements which should be considered (see section 6)?
- Do you have any comments on our initial assessment of the options? In particular, have we correctly identified the right analytical and technical issues, as a basis for further analysis? (see section 7).

2. Structure of the paper

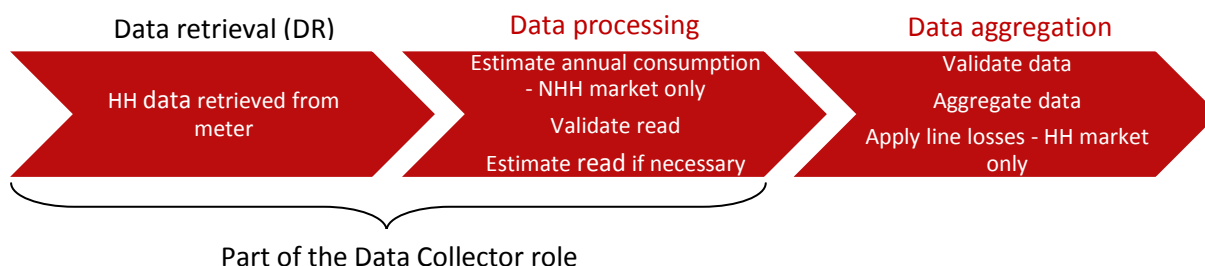
2.01 This paper contains the following sections:

- Section 3 – what we are looking at
- Section 4 – why we are looking at it
- Section 5 – outline of the options for DP and DA
- Section 6 – interactions and dependencies
- Section 7 – overview of initial assessment of options against evaluation criteria
- Section 8 – next steps
- Annex 1 - current arrangements

3. What we are looking at

- 3.01 Under the Balance and Settlement Code (BSC) suppliers are responsible for appointing agents to collect and prepare data for settlement. While the specifics of the role can differ depending on how data is settled (HH or NHH), generally speaking, a data collector undertakes data retrieval by retrieving consumption information¹ and processes data by validating consumption information and generating estimates. A data aggregator packages consumption data.² The main functions which Supplier Agents conduct, for both HH and non-half-hourly (NHH) consumers are set out in figure 1 below (more detail is set out in the Annex 1).

Figure 1 - overview of agent functions



- 3.02 Five of the larger suppliers have established their own in-house Supplier Agent businesses whereas other suppliers use independent Supplier Agents to perform these functions.
- 3.03 When the Data and Communications Company (DCC) starts offering services, it will perform the Data Retrieval (DR) function for all domestic smart meters and will provide an opt-in service for smart and advanced meters in the non-domestic market.³
- 3.04 However, should all consumers be settled against actual HH data from smart and advanced meters certain other agent functions in the current NHH market, particularly estimating consumption, would no longer be necessary. However the functions specific to the HH market – validating reads, estimating reads when they are unavailable and aggregating reads by supplier – would still be necessary. Put simply, should all consumers be settled against HH data then DP/DA will still be necessary, and aside from estimation, we do not think these functions will need to change significantly.
- 3.05 Therefore, a key regulatory question remains as to whether we should intervene to change responsibility for these functions in the future, and if so how.

4. Why we are looking at it

- 4.01 Under the Smarter Markets Programme, the change of supplier project initially considered the responsibility for DP/DA. Working with the change of supplier expert group (COSEG), this project concluded that giving responsibility of these functions to a central agent(s) was not required to improve the reliability and speed of the transfer process, but that other efficiency drivers for having central agent(s) responsible for DP and DA functions in the electricity market may still exist. Our April 2014 settlement project launch statement also signalled that there could be efficiencies from a central agent undertaking DP/DA.
- 4.02 We have since held bilateral meetings with some stakeholders on the potential key benefits of a central provider(s) supplying DP and DA functions, along with reasons why this may not be in the interests of consumers. Broadly, the main potential arguments can be summarised as follows:

¹ This information is either HH data or meter reading retrieved from the meter, either remotely or through a site visit.

² This is packaged into a single value for all the supplier's supply points in a region for each settlement period. It also provides an element of validation

³ Our assumptions noted that suppliers will receive consumption data from 97.5 per cent of smaller non-domestic premises with smart meters through the DCC but will not receive HH data from smaller non-domestic premises with advanced meters.

- Central provision could improve data quality by simplifying processes by reducing multiple data hand-offs⁴ and having more standardised processes⁵. Another view is that a model where independent Supplier Agents compete with each other in a smart world is sufficient to deliver data quality standards.
- Central provision could provide scope for cost efficiency gains in carrying out DP/DA through economies of scale, and also by reducing the costs suppliers' face in managing exceptions. Another view is that competition between independent Supplier Agents has driven down costs to the benefit of consumers and could continue to do so in a smart world.
- Central provision may simplify (to some extent) the settlement process and so reduce costs in understanding and entering this process for new entrants.

Data quality

4.03 Errors in the data used in settlement which are not identified or are unresolved affect the accuracy of settlement. These errors are called exceptions and result from erroneous inaccuracies in consumption information or inconsistencies in data between parties. This inaccuracy can lead to error being smeared across all suppliers⁶ which can have different impacts:

- affect suppliers' ability to forecast accurately.
- lead to errors in cost allocation – parties pick up costs of errors for which they are not responsible and cannot control.⁷

4.04 The BSC auditor's report informs that the two most material causes of error in the domestic and smaller non-domestic sector result from inconsistencies in Profile class and Standard Settlement Configuration – both of which would be obsolete if all consumers were settled against their HH data from smart and advanced meters.⁸

4.05 However, other causes of exception will continue to exist. Some stakeholders have informed us that one such cause is the number of parties (not only DP and DA agents, but also suppliers and Meter Operators) with different systems and processes, who are involved in the settlement process.⁹ 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.¹⁰ There is a view that simplifying the DP and DA arrangements in the future by having a central agent(s) responsible for DP/DA could reduce exceptions caused by having multiple parties involved in settlement.

4.06 Supplier Agents can manage exceptions and assist in improving settlement performance – this may be offered along with or as part of the core DP/DA service.¹¹ We note views that competition between independent Supplier Agents in managing exceptions and settlement performance has driven improvements and standards in data quality. However, the quality of service agents provide can vary across providers and the lack of a consistent approach to resolving exceptions across the market can contribute further to market complexity and negatively affect data quality. But it should also be noted that a central agent would homogenise services which could carry risks of poor service quality and little scope for innovation. Central provision may reduce suppliers control over quality of the data from their sites, which could dampen incentives on such parties to take action to resolve exceptions.

⁴ Hand-offs occur when data is exchanged from one party to another.

⁵ Different players may have different ways of carrying out activities and functions.

⁶ In any half hour period, the total energy allocated is unlikely to match the volume that is used. The difference is spread across all suppliers. Therefore, suppliers must take account of this in their forecasting. The amount of energy that will be spread across suppliers can be difficult to predict, especially for new entrants that are less familiar with historical trends.

⁷ This latter effect is probably more important than the former.

⁸ PWC, *BSC Auditor's report for the year ended 31 March 2013*, 2013, can be found at <http://www.elexon.co.uk/wp-content/uploads/2013/06/BSC-Audit-Report-31-March-2013-FINAL.pdf>

⁹ Other potential sources of error in the future include: missing data as a result of remote communications malfunctioning, theft and meter malfunctioning

¹⁰ A change of supply event can in particular result in settlement inaccuracy as data has to flow between the losing and gaining supplier and their agents

¹¹ For example, agents may use data which comes from data aggregation to provide such services.

Cost efficiencies

- 4.07 Another key issue related to DP and DA arrangements is the scope for cost efficiencies. One view is that simplifying processes (eg hand-offs and interfaces) through a central agent providing DP/DA provides scope for cost efficiency gains in carrying out these functions through economies of scale. However an alternative view is that having a central agent is unnecessary as competition has brought the costs of delivering DP and DA down, and could reduce such costs further in a smart world. Stakeholders have pointed to the current HH market where competition has seen a significant real terms reduction in costs for the provision of Supplier Agent services.
- 4.08 In addition, if a central agent(s) were to reduce exceptions, further cost efficiencies could be realised from suppliers reducing the cost of resolving exceptions. Suppliers currently have to invest in data quality teams to identify, investigate and resolve exceptions. These teams may form part of the in-house agent functions which larger suppliers have or for smaller suppliers are the teams which liaise with external agents to resolve error. Any reduction in staffing from having a central agent(s) could deliver savings to the benefit of consumers. Another view is that competition has reduced such costs, and may continue to do so (for example, where there is competition on managing exceptions).¹²

Simplification/new entrants

- 4.09 Simplifying settlement through central agent(s) could strengthen competition to some extent if new entrants to the market will incur lower costs in understanding the settlement arrangements. This may depend on how such suppliers view complexity of the settlement process in a smart world. A central agent(s) may reduce the need for a new entrant to contract with multiple parties before they can join the electricity market and also incur costs in understanding the settlement arrangements. Though the extent of any further benefits may not be large, given other arrangements may still exist in a smart world (e.g. contracts with meter operator), and if suppliers tend to choose a single Supplier Agent to undertake DP and DA.

Policy objective

- 4.10 Based on our interpretation of the above views, our policy objective is to ensure that the arrangements for who is responsible for DP and DA functions are simple, cost-effective, and result in high quality data being used in settlement. In meeting this objective we are also interested in whether separate arrangements are necessary for consumers who may continue to use traditional meters.

5. Options

High level options overview

- 5.01 As part of our approach we have used the discussions at COSEG as a starting point, and then built on and refined these where necessary to produce an initial view for our settlement work.
- 5.02 We have considered three broad alternative options for considering the arrangements for DP and DA where consumers are settled on HH data using smart and advanced meters:
- **Option 1: Supplier Agents**
 - **Option 2: Central agent(s)**
 - **Option 3: Hybrid competition**

¹² Though we understand that suppliers have chosen to use certain agents as basis for competition based on quality of service (ie the managing performance), but have paid a higher premium in order to do so.

- 5.03 Under Option 1, the current market structure where independent Supplier Agents can compete in the provision of DPDA functions would not be reformed.¹³ Option 2 represents a significant change to the market structure as single central bodies and/or suppliers would be designated responsibility for DP/DA.¹⁴ Finally, we have also considered a hybrid model where both central agent(s) and Supplier Agents can supply DP/DA.
- 5.04 Different options have different implications for achieving our policy objectives of having DP/DA arrangements which are simple, cost-effective, and results in high quality data being used in settlement. They also may have different market impacts. We now set out how we have considered our options, before setting out a long-list of options.

Key considerations for option design

- 5.05 Table 1 sets out a number key considerations which can assist us in understanding option design and allow us to consider whether there is scope to mitigate any policy risks (such as potential reduction in any competition benefits from centralisation options).

Table 1 – option design

<i>Design question</i>	<i>Explanation</i>	<i>Considerations</i>
1. How can processes be simplified?	Scope for simplification of processes which affect DPDA	Whether processes can be improved by reducing hand-offs and allowing standardisation through options
2. Who should be the central agent?	New providers responsible for DP DA functions	Choice of central bodies and/or suppliers
3. How should the central body be structured?	Type of structural delivery model for a central body	Choice of procurement and management model or a full service delivery model
4. Where should DP/DA functions sit?	Allocation of DP DA functions to new providers	Choice of allocating all functions under one type of body or allocating different functions to different bodies
5. Which consumers should use a central body?	Scope of who should use a central body	Whether needs and requirements of non-domestic consumers should be met by parties other than a central body
6. What should be the scope of the central body service?	Central body as a data access provider Central body undertakes provision of certain non-core DP DA services	Whether Supplier Agents need to access data to provide services which rely on DPDA and support settlement. Whether both central body and Supplier Agents in the provision of certain non-core DPDA services.

- 5.06 **How can processes be simplified?** By definition Options 2 and 3 may allow scope for process simplification. However, under option 1 there is potentially scope to simplify the processes related to DPDA with little change to the market structure - we have set out a sub-option for simplifying processes under option 1.
- 5.07 **Who should be the central agent?** Under options 2 and 3 we have identified that either the DCC, Elexon, a new central body or suppliers could be responsible for DPDA. Each type of provider has different roles and governance arrangements.

¹³ Suppliers who use in-house agents would be able to continue with these arrangements.

¹⁴ While a supplier would not technically be a 'central agent', we have included consideration of whether suppliers should carry out certain functions (ie data processing validation) under this option - see sub-options later in document. Though we accept that a supplier may want to choose to retain the option to use a Supplier Agent under this option, and so this could be allowed in such an option (e.g. a Supplier Agent could do this task as a data manager). For reference to our options, for the purposes of this this paper, we refer to central agent(s) as both central bodies and suppliers.

- 5.08 **How should the central body be structured?** Our initial view under options 2 and 3 is that a procurement and management model may potentially be better in mitigating potential effects of removing competition. It may also be better in terms of offering flexibility for future change and integration with existing central body arrangements. Our option assessment reflects this.
- 5.09 **Where should DP/DA functions sit?** Under options 2 and 3, we include a variant where different activities sit with different providers - DP validation reads could sit with suppliers¹⁵; DP estimation calculations could sit with Elexon; DA check of MPAS could sit with DCC as part of central registration; and DA aggregation of data would sit with Elexon.¹⁶ Other variants would allocate all functions to one type of central body.
- 5.10 **Which consumers should use a central body?** Under option 2 we could restrict smaller non-domestic consumers' use of a central body service,¹⁷ to protect interests of such consumers who prefer to use Supplier Agents services. Depending on how this is done, there may be negative implications in terms of maximising coverage and simplicity (by having different processes for different consumers). We set out three alternative approaches in our detailed options - mandatory, elective, or prohibited use¹⁸. We have not yet undertaken a comparative assessment, as we would welcome views on whether there is sufficient concern to merit further consideration.
- 5.11 **What should be the scope of the central body service?** Independent Supplier Agents currently compete on providing exception and settlement management services. This begs a question of what the impact of centralisation would be on Supplier Agents ability and incentives for continued provision in a smart world. If we were concerned about a negative impact, one option could be to allow access to a central body. We are also interested in whether a central body should provide such a service.¹⁹ For the purpose of this initial assessment we have designed options 2 and 3 so that central providers are prohibited from providing these non-core DPDA services, but that providers of exception management services could access the data from the central provider (via suppliers). However, we welcome views as we recognize there are trade-offs to consider. We also welcome views on the potential impact on these services of centralising the core DP DA services (e.g. on Supplier Agents ability and incentive to provide these under a central model).

Long-list of options

Option 1: Supplier Agent

- 5.12 In this option DP and DA functions continue to be performed by individual supplier agents and there is no central agent(s). The role of Supplier Agents would need to change to reflect the activities they would be required to conduct to facilitate the settlement of all consumers against HH data from smart and advanced meters.
- 5.13 There are two sub-options for how HH data from smart and advanced meters can be obtained via the DCC:
- **1a) Suppliers obtain HH data via the DCC and pass this to their agents**
 - **1b) Supplier Agents obtain HH data directly via the DCC** (this would introduce process simplification over and above option 1a)

¹⁵ We understand some suppliers may want to have control of the DP validation activity for commercial control and assurance. Doing so may also support consistency between billing and settlement reads.

¹⁶ This combination is based on discussions at COSEG.

¹⁷ We consider that this is only relevant to option 3 as under other options there remains a degree of choice and so our potential concerns discussed above are not relevant for other options.

¹⁸ Under mandatory, elective, prohibited, smaller non-domestic consumers either must use the centralised provider, can use the centralised provider but are under no obligation, or are prohibited from using the centralised provider, respectively. In all cases larger non-domestic consumers operate to existing processes, as per the scope of our project.

¹⁹ On one hand, such a requirement would go beyond the current regulatory requirements; individual supplier agents may continue to seek to compete with each other on this element; and potential centralised providers may not be best placed to provide such a service. On the other hand, there may be simplicity and efficiency benefits from centralising this type of service, particularly given its strong link to DP DA activities. If both a centralised provider(s) and individual supplier agents provided it then this may also introduce more intense competition in the provision of such services.

Option 2: Central agent(s)

5.14 As discussed, under this option we would mandate that a central body and/or suppliers would be responsible for some or all of the DP and DA functions.

5.15 Suggested variants of this option are:

- **2a) DCC responsible for all DP/DA on either mandatory, elective or prohibited basis for smaller non-domestic consumers²⁰**
- **2b) Elexon responsible for all DP/DA on either mandatory, elective or prohibited basis for smaller non-domestic consumers**
- **2c) New single central body responsible for all DP/DA on either mandatory, elective or prohibited basis for smaller non-domestic consumers**
- **2d) DCC responsible for DA MPAS check; Elexon responsible for DP and DA calculations; Suppliers responsible for DP validation; on either mandatory, elective or prohibited basis for smaller non-domestic consumers**

Option 3 – Hybrid competition

5.16 Under this option central agent(s) would be appointed which could be used on request. This agent(s) would be allowed to compete with independent Supplier Agents. Essentially, consumers of DP and DA functions could choose between different types of provider for these services - central bodie(s) or independent supplier agents.

5.17 The rationale would be to allow the market to move naturally towards central provision if it made commercial sense, whilst retaining any potential benefits of independent Supplier Agent competition.

5.18 Our sub-options are as follows:

- **3a) DCC responsible for all DP/DA**
- **3b) Elexon responsible for all DP/DA**
- **3c) New single central body responsible for all DPDA**
- **3d) DCC responsible for DA MPAS check; Elexon responsible for DP and DA calculations; Suppliers responsible for DP validation;**

5.19 Where consumers purchase DP and DA functions from individual supplier agents, this would then fall under the BSC governance arrangements.

6. Interactions and dependencies

6.01 There are a number of interdependencies and interactions (some of which are with other smarter markets settlement work):

- **Data privacy framework.** Access to consumption data from smart meters is governed by licence conditions. Currently suppliers, and all other parties, need opt-in consent from domestic and micro businesses to access their HH data. We have assumed that HH data from smart and advanced meters will be available for the purposes of settlement. Whether or not DP/DA are centralised will impact on the current rules around data privacy. A central provider model could potentially allow licence conditions to

²⁰ DCC would be responsible for these activities for domestic customers; but then for smaller non-domestic customers would be mandatory, elective or prohibited.

remain. In particular, as part of its role, a central body could aggregate data prior to providing it to suppliers and settlement. This may be sufficient to address concerns about market participants having access to granular data on individual consumers' consumption. The central body would need to comply with the Data Protection Act and could also be subject to restrictions on how it uses the data. However, a complexity of this is whether aggregated data for sites settled against HH consumption data would give suppliers sufficient ability to manage settlement, for example to manage forecasting risk. We welcome views.

- **Change of supplier related reforms.** We are conscious that while the drivers for DP/DA reform sit with settlement, there are interdependencies to change of supplier process given the role of agents. For example, were DCC to take on D/DA, there is a timing question about coordinating reform eg how to best integrate any reform with that of centralised registration.
- **Settlement timetable.** We have a separate settlement project. Settlement run timetable affects DP/DA because it influences how quickly DP/DA needs to happen.
- **Estimation.** We are undertaking separate work looking at a new process around estimation methods will need to be created. This links to DP/DA as estimation is changing one of the functions that DP/DA needs to perform.

7. Initial evaluation of options

7.01 The tables below set out a:

- Our initial view of how the sub-options compare with each other against some of the key criteria – sub-option initial comparative assessment.
- Our initial view of how our options compare overall – comparative assessment of our high-level options.

Sub-options: initial comparative assessment

Table 2: initial assessment of sub-options (option 1 - Supplier Agent)

	1a) Supplier Agent access from suppliers	1b) Supplier Agent access from DCC
Simplicity	<ul style="list-style-type: none"> • little further scope for process simplification (multiple hand-offs & un-standardised processes remain) • Above complexity may affect certain new entrants to some extent if necessitates multiple party contracts. 	As 1a) but marginally simpler processes (one-less hand-off)
Accuracy	<ul style="list-style-type: none"> • remote capabilities of smart and use of HH data reduce exceptions, but little scope for fewer errors related to complex processes. • Supplier Agent competition and close agent relationships with suppliers could drive up/maintain data quality standards in managing error/settlement performance – especially for smaller suppliers and larger suppliers who procure such services (suppliers would still be allowed to bring functions in-house which may help manage data effectively). • depending on the extent data quality is improved, this could allow these suppliers to better manage risks of settlement (e.g. imbalance position). 	As 1a) but potentially fewer errors (marginally) if less hand-off.
Cost	<ul style="list-style-type: none"> • Suppler Agents will need to invest in systems to manage more HH data. • minimal scope for further economies of scale of undertaking DPDA (multiple providers fixed costs spread over DP DA output which is fragmented) • potential for further cost savings in managing/resolving error? (if fewer errors and independent Supplier Agent competition may deliver cost savings 	As 1a) but potential reduction in costs of resolving and managing exceptions and process efficiencies (marginally) if less hand-off.

	for suppliers who continue to use these services.	
Flexibility	<ul style="list-style-type: none"> strong future flexibility to react to needs of market (e.g. innovate/business models) as benefits of Supplier Agent competition retained. 	As 1a)
Integration	<ul style="list-style-type: none"> little change to market structure; complex interaction with data privacy and regulatory changes (e.g. require supply license amendments and obligations to allow suppliers access HH data and Agents to use for settlement) 	As 1a)
Risk	<ul style="list-style-type: none"> fragmented accountability for DP/DA (but suppliers retain some control over performance –close Supplier and Supplier Agent commercial relationships); lower risk of single point of failures (as range of providers). 	As 1a)
Implementation	<ul style="list-style-type: none"> fairly uncomplicated and quick implementation (e.g. changes to license conditions on access to data; BSC amendments) 	As 1a) (except may require changes to SEC to allow agents to access HH data for settlement purposes)
Consumer impact	<ul style="list-style-type: none"> Scope for suppliers to better manage settlement risk (e.g. imbalance) if better data quality standards and fewer errors - allowing cost savings to consumers; retains potential benefits of competition for consumers (e.g. choice, managing data quality, innovation, lower prices), but need to be weighed against by any costs or complexities of competition which affect consumers (e.g. less potential for process efficiencies and simplification) 	As 1a) (but maybe some further cost savings to consumers from marginally simpler processes)

Table 3: initial assessment of sub-options (Option 2 - central agent(s))

	2a),b),c) - functions with a) DCC b) ELEXON c) new body	2d) – functions are split between suppliers, Elexon, DCC
Simplicity	<ul style="list-style-type: none"> strong scope for process simplification (fewer data hand -offs & end to end standardised processes) reduced need (to limited extent) for a new entrant to contract with multiple parties before they can join the electricity market and also incur costs in understanding the settlement arrangements. 	<ul style="list-style-type: none"> more process complexity than 2b)c)d) from having multiple providers (e.g. unstandardized processes; more hand-offs)
Accuracy	<ul style="list-style-type: none"> strong scope for process simplification allows fewer related exceptions. One provider weakens potential competition benefits from independent Supplier Agent (e.g. those which drive up data quality standards in exception/settlement management); but weaknesses could be addressed by incentive scheme – see ‘scope of central body service’ in option design. 	<ul style="list-style-type: none"> more hand-offs /un-standardised processes may mean more exceptions than 2a),b) and c)

Cost	<ul style="list-style-type: none"> • upfront cost in establishing central agent; potential for economies of scale of delivering DP/DA (particularly from automated functions) - one provider fixed costs spread over all DP DA output. • fewer exceptions from simplified processes which would reduce cost of managing exceptions. 	<ul style="list-style-type: none"> • more sets of upfront cost and potentially less scope for economies of scale than options 2a) 2b) and 2c) - if many providers fixed costs spread over DP DA output/this output is fragmented over multiple providers? Higher cost of managing exceptions if more exceptions.
Flexibility	<ul style="list-style-type: none"> • flexibility to respond to market minimised as some potential benefits of competition and choice removed (though Supplier Agent access to data could mitigate against). • single governance framework may provide more flexibility for allowing future changes. 	<ul style="list-style-type: none"> • As option 2a),b)c), but multiple governance frameworks
Integration	<ul style="list-style-type: none"> • large structural changes to existing market. • central body could undertake activities which conflict with current role/expertise/experience - impact may differ across bodies (e.g. data quality role; non-data quality role); low integration risk with 'new body' as would be purpose built for role'; integration design risks to planned related functions (e.g. central registration) if not co-ordinated. • potentially integrates with DPA (depending on regulatory restrictions) 	<ul style="list-style-type: none"> • potentially larger structural change to existing market than 2a) 2b) and c), but better alignment with body roles and activities. • potentially worse integration with DPA
Risk	<ul style="list-style-type: none"> • certainty around charging and cost recovery of investment for central body and users of central body (e.g. no risk of double charging) • positive effect from single point of accountability (but suppliers potentially lose control); risk of single point of failure. • Ofgem's level of governance control may vary depending on the central body. • risk of impact on other central body services (e.g. DCC core services; Elexon SVA); negligible risk to a 'new body'. • risk of monopoly power of having one seller (potentially mitigated through safeguards) 	<p>As 2a)b)c)</p> <ul style="list-style-type: none"> • fragmented accountability (but suppliers retain some control); less risk of single point of failure. • different bodies with different levels of governance oversight
Implementation	<ul style="list-style-type: none"> • complex implementation – potentially large governance changes; timing risk from changes to market structure - may vary by body type (e.g. depending on capacity and experience of body) 	<ul style="list-style-type: none"> • complex implementation – potentially more so than 2a),b)c) as more bodies.
Consumer impact	<ul style="list-style-type: none"> • the removal of any potential Supplier Agent competition benefits to consumers (though impact could be mitigated by regulatory incentives) need to be weighed against benefits of central body doing DP/DA: <ul style="list-style-type: none"> - scope for suppliers to manage risks of settlement (e.g. imbalance position), if data accuracy improved, allowing cost savings to be passed 	<p>As 2a)b)c)</p> <ul style="list-style-type: none"> • but potentially lower scope for passing on cost savings to of doing DP/DA (if fewer economies of scale opportunities) and lower scope for cost savings to suppliers from exceptions?

	<p>to consumers.</p> <ul style="list-style-type: none"> - potential for cost savings of doing DPDA passed onto consumers in terms of lower DPDA prices and in resolving exceptions (if outweighs status quo of costs to suppliers of delivering DPDA via supplier agents). - potential benefits to consumers if new entrants to the market will incur lower costs in understanding the settlement arrangements • risk of lower prices not being passed onto consumers if single provider exercises market power, but could be mitigated through regulatory incentives. • How would option affect other non-DP/DA central body charges (e.g. Elexon settlement charges & DCC charges)? 	
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Table 3: initial assessment of sub-options (Option 3 - Hybrid competition)

	3a),b),c) - functions with a) DCC b) ELEXON c) new body	3d) – functions are split between suppliers, Elexon, DCC
Simplicity	<ul style="list-style-type: none"> • potentially complex processes (but dependent on evolution of market structure to a central provider - e.g. whether users choose central agent and so market moves to one provider) 	<ul style="list-style-type: none"> • potentially more complex than 3a)b)c)
Accuracy	<ul style="list-style-type: none"> • potential complexity may remain and lead to data exceptions; but dependent on market structure evolution and benefits of competition – if market moves to one provider, then some data quality problems related to distribute architecture/complex processes may remain; Supplier Agent competition may improve exception management/settlement performance for certain providers. 	<ul style="list-style-type: none"> • more hand-offs /un-standardised processes may mean more exceptions than 3a),b) and c)
Cost	<ul style="list-style-type: none"> • up-front central agent costs. • are there costs of competition to market for doing DPDA - having many different parties competing? Alternatively, are there cost savings/benefits to the market from doing DPDA - having different parties competing on DP and DA? • may reduce managing exceptions costs (depend on reduction in exceptions/supplier agent competition) 	<ul style="list-style-type: none"> • more sets of up-front costs. Potentially less scope for economies of scale?
Flexibility	<ul style="list-style-type: none"> • potential flexibility from competition/choice (depending on evolution of market structure) – e.g. new business models • potential for multiple governance frameworks and regulatory/governance • potential governance uncertainty - changes to governance/regulation over 	<ul style="list-style-type: none"> • As option 3a),b)c), but multiple governance frameworks

	time depending on how market structure changes.	
Integration	<ul style="list-style-type: none"> • large changes to market; central body could undertake activities which conflict with current role/expertise for DCC and Elexon (but lower impact as market choice); potentially complex interaction with DPDA 	<ul style="list-style-type: none"> • potentially more alignment with current role/expertise for single providers; • potentially more complex interaction with DPA.
Risk	<ul style="list-style-type: none"> • potential for cost/price uncertainty – central agent cost recovery/how suppliers are charged (e.g. double charging). • risk of distorting competition and market structure (potentially depending on appropriate regulatory safeguards) • fragmented accountability; lower risk of single point of failure (depending on evolution of market structure) 	<ul style="list-style-type: none"> • fragmented accountability (but suppliers retain some control); less risk of single point of failure. • different bodies with different levels of governance oversight
Implementation	<ul style="list-style-type: none"> • complex implementation – potentially large governance changes; timing risk from changes to market structure - may vary by body type (e.g. depending on capacity and experience of body) 	<ul style="list-style-type: none"> • complex implementation – potentially more so than 3a),b)c) as more bodies.
Consumer impact	<ul style="list-style-type: none"> • Benefits and costs to consumers may depend on market evolution and costs and benefits of having different providers competing on DPDA. 	<ul style="list-style-type: none"> • As 3a)b)c) but potentially lower scope for passing on cost savings to of doing DP/DA (if fewer economies of scale opportunities) and lower scope for cost savings to suppliers from exceptions?

High level options: initial comparative assessment

Option 1 – Supplier Agent competition	Option 2 - Central agent(s)	Option 3 – Hybrid competition
<ul style="list-style-type: none"> • Simplicity – little scope to simplify processes • Accuracy – little scope for reducing data errors caused by distributed architecture and processes [but some current data issues resolved from smart and HH data]; competition may drive improvements in data quality. • Cost – upfront costs; little scope for further economies of scale in carrying out DPDA, but potential for some further reductions in cost of managing and resolving error. • Flexibility – best flexibility to accommodate market change as Supplier Agent competition and choice are retained – could lead to competition benefits (e.g. service quality and innovation). • Integration – requires little change to existing market structure, but would require regulatory changes to adhere to data and privacy. • Risks – fragmented accountability for DPDA (and managing exceptions), but no risk of single point of failure. Suppliers retain current level of control. • Implementation – easiest option to implement 	<ul style="list-style-type: none"> • Simplicity – best scope to simplify processes (may depend on how functions are allocated?) • Accuracy – best scope for reducing data errors caused by distributed architecture and processes (may depend on how functions are allocated). risk of poor service quality from only one provider. • Cost – requires upfront costs; potentially best scope for further economies of scale in carrying out DPDA? (may depend on how functions are allocated?) potential for some further reductions in cost of managing and resolving error. • Flexibility – potentially least flexibility to accommodate market change as independent Supplier Agent competition and choice are removed (but does option design mitigate some risks?) • Integration – requires large changes to existing market structure and may pose risk to central body performance (depending on how functions are allocated); potentially best integration with data and privacy requirements (if one central provider); • Risks – single point of accountability for DPDA for market; risk of single point of failure to users; risks to DPDA users from having one seller (but could be mitigated by regulatory incentives and safeguards); governance risks depending on who central provider is. • Implementation – complex implementation. 	<ul style="list-style-type: none"> • Simplicity – scope for further simplification processes (over option 1) dependent on whether market moves to one provider. • Accuracy – further scope for accuracy (over option 1) depends on whether market moves to one provider and competition. • Cost – requires upfront costs; potentially less scope for further economies of scale in carrying out DPDA than option 2 (if higher unit costs if largest cost of competition?); though would competition introduce cost savings in carrying out DPDA? potential for some further reductions in cost of managing and resolving error. • Flexibility – potentially more flexibility to accommodate market change by having competition and choice between independent Supplier Agents and central provider. • Integration – requires large changes to existing market structure and may pose risk to central body performance (depending on how functions are allocated); complications integration with data and privacy requirements (if one central provider); • Risks – potentially uncertain cost recovery of investment for central body and around how suppliers are charged for these costs; risk of strength of single body distorting competition; fragmented accountability; lower risk of single point of failure than option 2; governance risks depending on who central provider is. • Implementation – complex implementation.

8. Next steps

- 8.01 At the expert group meeting on 31 July we will present a summary of this paper followed by an initial discussion, largely focused on the questions set out in Section 2.
- 8.02 Drawing on the discussion at the 31 July meeting, we will further refine the options and evaluations of the options contained in this paper and return to the expert group at the 3 September meeting with our revisions for a further round of comment.
- 8.03 Following the 31 July meeting we ask Expert Group members to further reflect on the paper and the discussion to develop their thoughts ahead of the 3 September meeting.

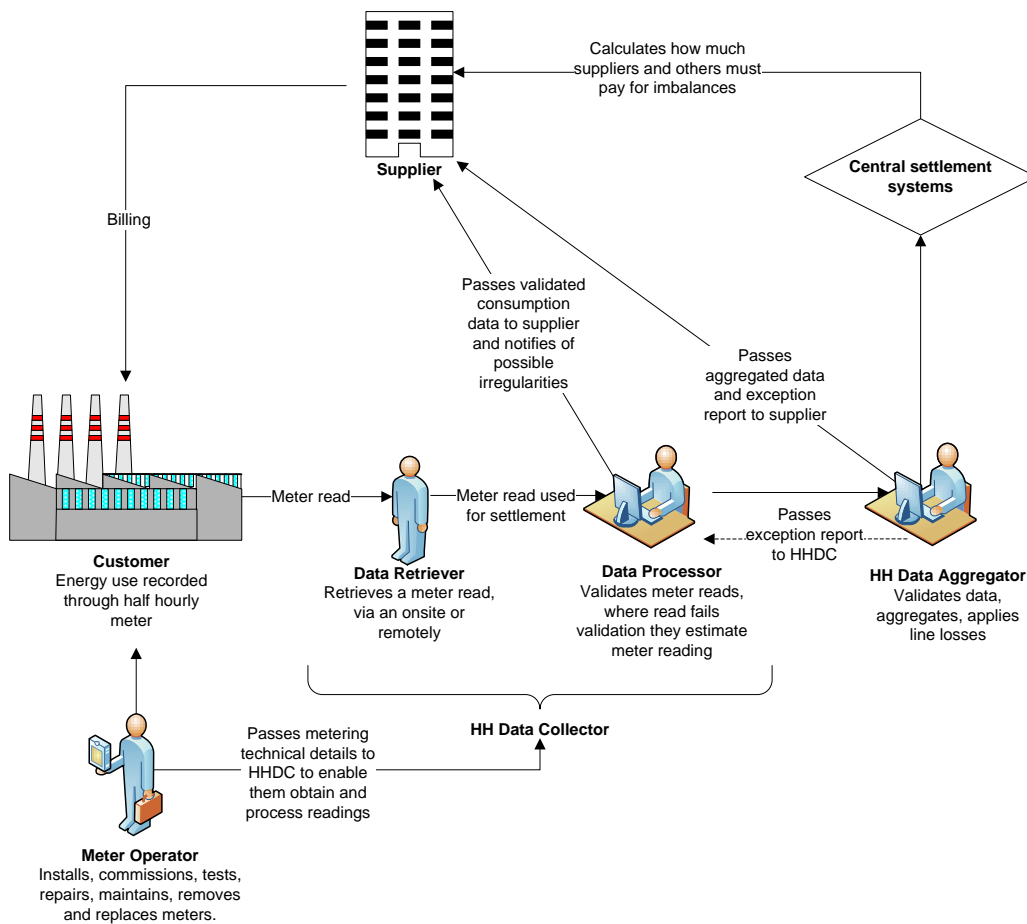
Annex 1 – background

This annex provides:

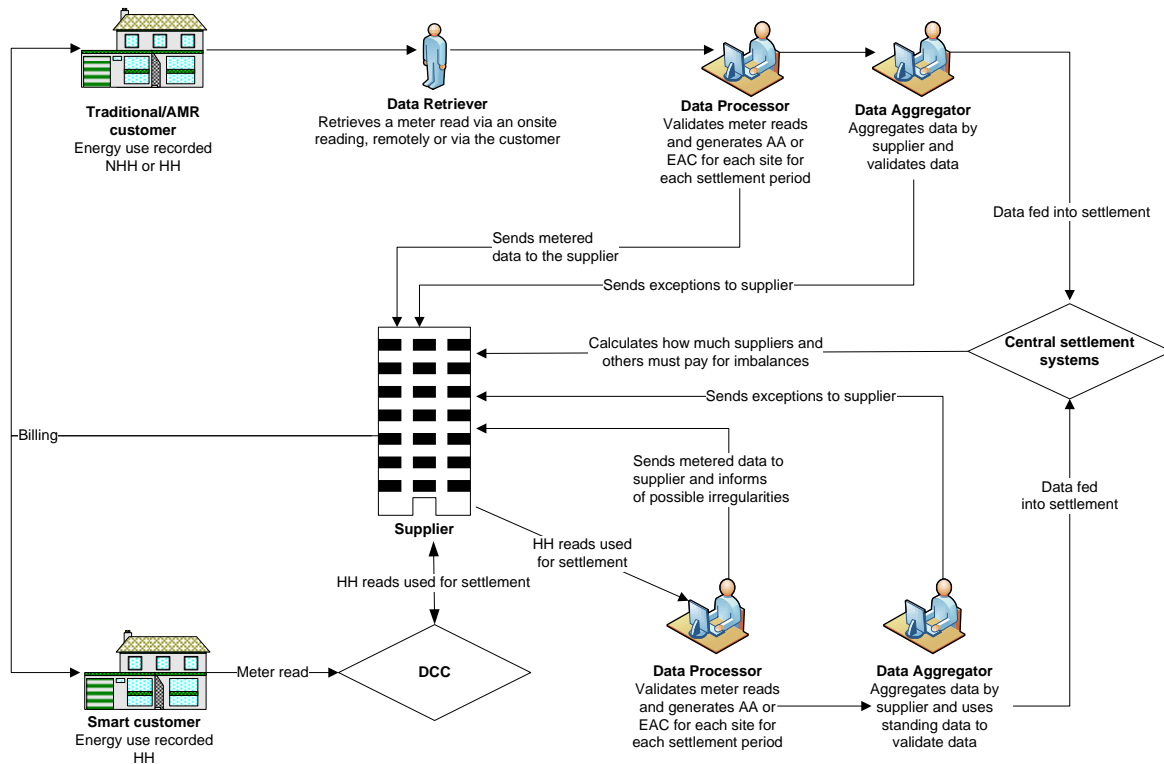
- a diagram of the current HH market because, as this is a useful starting point to consider how domestic and smaller non-domestic sites can be settled against HH data from smart and advanced meters.
- a diagram of which shows how domestic and smaller non-domestic market will work in the smart world (e.g. with DCC)
- It also provides more information on the current arrangements for DP and DA functions in both the HH and NHH market and which of these functions are likely to still be relevant in the future.

Annex figure 1: HH market

In the current HH market Supplier Agents are responsible for obtaining and processing data for the purposes of settlement. This process is set out below:



Annex figure 2: DPDA in future



Current and possible future functions

Table 1 below broadly outlines the DP and DA functions (as well as data retrieval for completeness) as required by HH and NHH settlement. The activities in bold are the ones which will continue to be relevant if all consumers were settled against HH data from smart and advanced meters.

Annex Figure 3 – Summary of DC and DA functions

Function		Description of activity
Non-half-hour Data Collection (NHHDC)	Data retrieval	<ul style="list-style-type: none"> Collect meter readings
	Data processing	<ul style="list-style-type: none"> Validate meter readings to check they are within permissible thresholds Calculate an estimate of annual consumption Send estimate of annual consumption to the non-half-hourly data aggregator (NHHDA)
NHHDA		<ul style="list-style-type: none"> Validate data received from NHHDC and registration data against market domain data²¹ Inform suppliers about data exceptions Aggregate estimate of annual consumption Send aggregated consumption data into settlement
Half-Hourly Data Collection (HHDC)	Data retrieval	<ul style="list-style-type: none"> Collect meter readings
	Data processing	<ul style="list-style-type: none"> Validate meter readings to check they are within permissible thresholds Estimate data if required (for instance if data is missing or when a meter reading fails validation) Send consumption data to the half-hourly data aggregator (HHDA) Perform site checks

²¹ Market Domain Data (MDD) is the reference data used by Suppliers, Supplier Agents and Licensed Distribution System Operators (LDSOs) in the retail electricity market. It allows the Supplier Volume Allocation (SVA) Trading Arrangements to operate. It includes significant information such as Standard Settlement Configuration (SSC), Profile Classes (PC), and Grid Supply Point (GSP) Groups. A simplified guide to ELEXON's Market Domain Data, ELEXON, 2014 at http://www.elexon.co.uk/wp-content/uploads/2014/02/mdd_made_easy_v4.0.pdf

Half-Hourly Data Aggregation (HHDA)	<ul style="list-style-type: none">• Validate data received from the HHDC and registration against market domain data• Aggregate data• Apply line losses²²• Send consumption data to the Supplier Volume Allocation Agent
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²² In the HH market line losses are applied by the HHDA in NHH settlement line losses are applied when data is in central settlement. Either could be appropriate in the future.