ofgem ofgem E-Serve Promoting choice and value for all gas and electricity customers

Smart Metering Implementation Programme: Communications Business Model

Document type: Supporting Document

Ref: 94d/10

Date of publication: 27 July 2010

Deadline for response: 28 October 2010

Target audience: Energy suppliers and network operators, consumers, consumer organisations and representatives, environmental bodies, meter asset providers, meter asset managers, meter operators, metering and communication equipment manufacturers, academics and other interested parties.

Overview:

This document is one of a number of supporting documents published alongside the Smart Metering Implementation Programme Prospectus.

To ensure efficiency and interoperability, communication with smart meters in the domestic sector will be managed centrally by a new, GB-wide function covering both the electricity and gas sectors. This function will also provide a basis to simplify and improve industry processes. This document sets out the proposed scope for DCC and our proposals for how it should be set up.

Contact name: Margaret Coaster

Tel: 020 7901 7000

Email: smartmetering@ofgem.gov.uk

Team: Smart Metering Team, Ofgem E-Serve

Context

The Government is committed to the rollout of electricity and gas smart meters to all homes in Great Britain and to the broad delivery framework underpinning the development of policy to date.

On behalf of the Department of Energy and Climate Change (DECC), Ofgem E-Serve has been managing the first phase of a central programme to design and implement new cross-industry arrangements for the delivery of smart metering. Ofgem E-Serve's smart metering work has been undertaken in conjunction with Ofgem's Sustainable Development Division.

The Prospectus represents the joint views of DECC and the Gas and Electricity Markets Authority (GEMA) based on the work conducted so far during the initial phase of the Smart Metering Implementation Programme (the programme). It sets out detailed proposals for consultation on the design and delivery of the smart metering system. Alongside the Prospectus, Ofgem is publishing a number of supporting documents which set out in more detail the alternative options considered.

Reflecting the approach adopted to date, the remaining work to scope the regulatory framework will be led by Ofgem E-Serve on behalf of DECC. Later this year, the governance and management arrangements for subsequent phases of the programme will be decided upon.

Associated Documents

DECC and Ofgem have jointly published the Smart Metering Implementation Programme Prospectus. This document is one of a number of Ofgem supporting documents published alongside the Prospectus.

DECC has also published updated impact assessments for the domestic and non-domestic sectors and a paper on disablement/enablement functionality for smart gas meters.

To help inform the programme, Ofgem also commissioned specific research (carried out by FDS) into consumer awareness of, and attitudes towards, smart metering.

All documents are available on the Ofgem website at the following location:

http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=40&refer=e-serve/sm/Documentation

Table of Contents

Summary

Centrally co-ordinated meter data communications

The Government has confirmed its commitment to the central communications model for the delivery of smart metering. Under this approach, communications between smart meters in domestic consumers' homes and authorised smart meter data users will be co-ordinated by a new, GB-wide data and communications function. The key benefits include cost efficiency, industry process efficiency and future flexibility for smart grids. The approach is also considered the best way of ensuring that communications coverage supports the completion of the rollout.

This new central function will have a key role in both data and communications services and is hence referred to as DataCommsCo (DCC). DCC will have a pivotal role at the heart of the energy industry. It must deliver a cost efficient and resilient service and be flexible enough to adapt to developments in the industry. DCC's procurement activities must drive the best value for money options, and its governance and management arrangements must ensure it meets its commitments.

We do not propose to oblige suppliers to use the services of DCC in relation to their non-domestic customers. Instead, we propose that suppliers may choose to use DCC if they wish to do so. More details on this issue can be found in the "Non-Domestic Sector" supporting document.

The primary issues in achieving a successful DCC are: the scope of its activities; and the approach to its realisation, governance and regulation.

The scope of the DCC function

There is a range of potential activities that could be performed by DCC. Initially, DCC could have a GB-wide communications function, which would provide secure two-way communications between smart meters and a central communications hub to which smart meter data users (suppliers, network companies and other authorised third parties) would have access for specified purposes.

More broadly, DCC could play a transformational role in streamlining and managing energy industry processes, and could support a range of value-added services. It is important to determine the appropriate scope for DCC, to ensure that it can deliver the benefits of the smart metering programme, without introducing unreasonable risk, including to the programme timeframes. At the same time, it is important to consider the potential for future development at the right time. The key issues in relation to DCC's scope are:

- **Data management**: The extent to which DCC's role goes beyond data carriage into data management and thus provides a mechanism to streamline energy industry processes; and
- **Communications services**: The extent to which it could use its network to enable the provision of value-added services beyond the energy industry.

We propose that the initial scope of DCC should be:

- **Secure communications and access control**: Providing a secure GB-wide communications network and ensuring that access to meter data is only available to authorised parties;
- **Translation services**: Providing a centralised service to ensure messages are translated to a consistent format and routed to authorised parties; and
- **Scheduled data retrieval**: Providing a service of co-ordinated data retrieval.

We do not propose to mandate any particular communications technologies; this will be determined by the market, subject to compliance with the relevant specifications. The smart metering system will provide infrastructure with the potential to support other initiatives. Subject to appropriate regulatory arrangements, this may provide, for example, an available means to support smart water metering communications. We consider that DCC should be restricted from providing services outside the energy industry or value-added services until it has stabilised its core functions.

Our view is that, subject to further analysis, including meter registration in DCC's scope will assist the delivery of the programme benefits, especially those resulting from improved change of supplier processes. However, this is a complex area, and one on which stakeholders have mixed views. Hence, we will work with stakeholders in parallel with this consultation to obtain further evidence to inform a decision on whether meter registration should be included in the DCC scope either initially or at some designated later date. The establishment of DCC also provides an opportunity to streamline the change of supplier systems and processes more generally.

We consider this proposal provides a sound basis to support smart metering, while reducing the implementation risk of a more extensive remit and allowing flexibility for change.

Delivering of broader industry reforms are outside of the scope of this programme and can be addressed through normal industry processes. For example, we do not envisage that DCC will absorb settlement functions from the existing central bodies as part of the programme. However, we recognise the key role DCC could play in energy industry transformation and the potential to provide value-added services in the future. Consideration will need to be given to how any future evolution of its scope over time could be facilitated. This is discussed further in the "Regulatory and Commercial Framework" supporting document.

Realisation, governance and regulation

DCC will occupy a key role at the heart of the energy industry. Its business model must ensure its performance, mitigate potential risks and provide flexibility for change. We believe that this is most effectively achieved by a single, GB-wide entity, delivering data and communications services, contracting with different organisations to support the specified service requirements.

We propose that DCC should be established as a new licensed entity to carry out procurement and contract management activities. The new licence would be granted by the Authority following a competitive licence application process. DCC would in

turn contract with and manage data and communications service providers to deliver the required services. We have discussed our preferred approach and the alternatives with the communications regulator, Ofcom, and will continue to work closely with Ofcom as the programme moves forward.

We propose that the governance framework for DCC will be provided through a combination of: new licences granted under the Gas and Electricity Acts; and a new Smart Energy Code spanning gas and electricity. More information on the Code can be found in the "Regulatory and Commercial Framework" supporting document.

We propose that the DCC licence will include appropriate measures to ensure efficient and economic outcomes such as the use by DCC of competitive mechanisms, including competitive procurement of required services and the retendering of contracts; and appropriate regulatory incentives for DCC to manage its own costs and performance efficiently.

We consider that this will provide the optimum mechanism to achieve the benefits of centralised co-ordination of data and communications services while ensuring the efficiency of the central function.

Staged Implementation – transitional arrangements

In order to bring forward the start of rollout and help deliver early benefits, we are proposing a staged approach to implementation. Suppliers will start to install smart meters that meet the minimum requirements defined in a common technical specification ahead of DCC being established. Between the point at which licence modifications mandating rollout targets come into effect and DCC service availability, suppliers would be responsible for procuring their own communications services.

From the date on which DCC starts provision of services, suppliers will be required to use these services for all wide area network (WAN) communications with smart meters in the domestic sector. This includes all meters installed prior to that time that comply with the relevant technical specifications. Communications contracts entered into by suppliers would need to be either of limited duration or capable of being novated to DCC once it commences provision of services. To provide certainty to suppliers and protect the interests of consumers, specific arrangements may need to be put in place to facilitate this process. For example, DCC could be required to take on communications contracts meeting certain pre-defined criteria. We are also considering earlier measures that may be necessary around interoperability in order to help ensure consumers will not face barriers in switching suppliers.

Next steps

Analysis and stakeholder feedback have indicated that our proposed approach to the scope and realisation of DCC represents a viable commercial proposition that can be delivered to meet the requirements of the business case. We welcome views on our proposals for the scope, realisation, governance and regulation of this new organisation.

In parallel with this consultation, we will take forward further analysis of DCC's scope of activities with the assistance of stakeholders through a Data and Communications Expert Group. Alongside responses to this consultation, the further analysis will inform final decisions on the optimal initial scope for the data and communications function.

The new licence and Smart Energy Code are currently expected to be available by spring 2012, with establishment of DCC as a procurement and contract management entity complete and DCC services available by autumn 2013.

1. Introduction

1.1. The Government is committed to every home in Great Britain having smart energy meters, empowering people to manage their energy consumption and reduce their carbon emissions. Businesses and public sector users will also have smart or advanced energy metering suited to their needs. The rollout of smart meters will play an important role in Great Britain's transition to a low-carbon economy, and help us meet some of the long-term challenges we face in ensuring an affordable, secure and sustainable energy supply.

1.2. The key feature of smart meters is that they provide the ability for remote communications between the meter and authorised parties (suppliers, network operators and authorised third parties. The Government has confirmed that a central communications provider will provide a two-way communications channel between the smart meters in customers' premises in the domestic sector and authorised parties. This provider has a key role in both data and communications services and is referred to here as DataCommsCo (DCC).

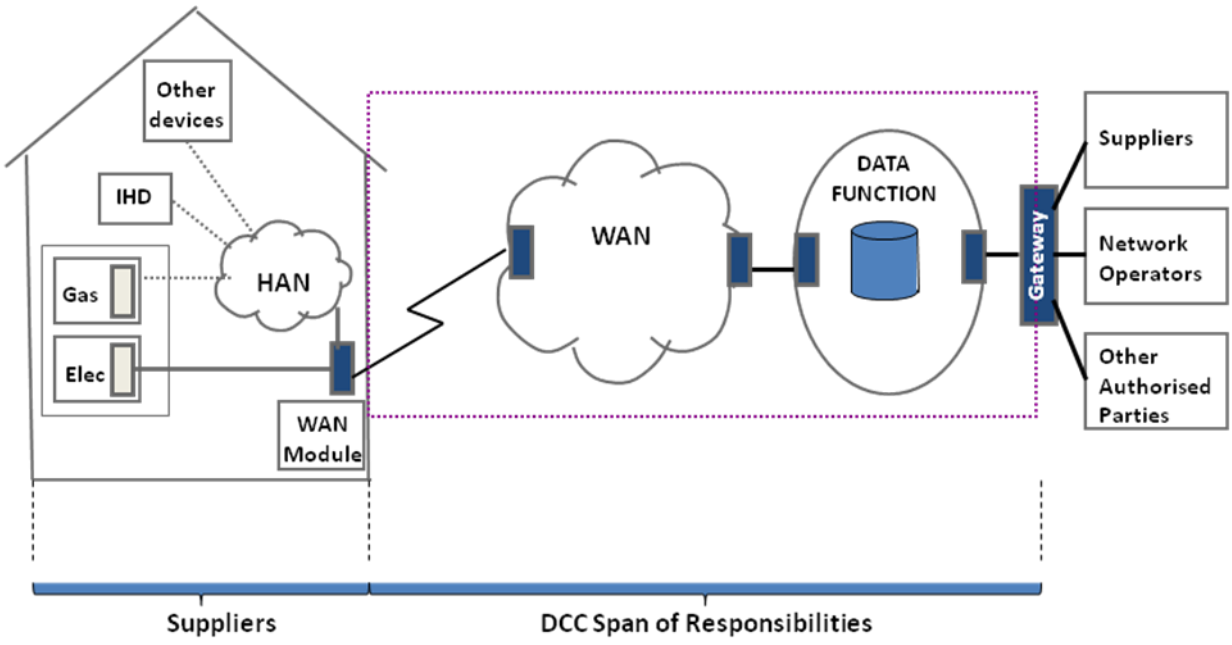
1.3. This approach provides the potential for key benefits:

- **Cost efficiency**: Centralisation will provide substantial economies of scale in providing data and communications services;
- **Coverage of hard-to-reach premises**: Centralisation enables holistic communications solutions that maximise the opportunity for full rollout;
- **Efficient industry processes**: DCC has a great potential to build on its data management function to streamline and improve industry processes, including change of supplier processes;
- **Data security**: A centralised communication function makes it easier to ensure comprehensive and consistent security arrangements;
- **Smart grids**: Centrally co-ordinated communications provide greater ability to enable the development of smart grid services over time, compared to the alternative of distributed communication solutions; and
- **Extra-industry value-added services**: DCC will operate a GB-wide communications infrastructure. This can be leveraged to offer value-added services to other sectors, driving down the cost to the energy industry.

The scope of DCC's activities

1.4. Figure 1 shows the proposed scope of DCC's responsibility across the end-to-end smart metering system. The various aspects are discussed below.

Figure 1 – Proposed smart metering system responsibilities



- **Customer premises**: This will remain the suppliers' responsibility. Within the premises, the meters communicate to the in-home display (IHD) and to a WAN communications module via the home area network (HAN)[1]. The key interface with DCC is the WAN communications module. Roles and responsibilities within the customer premises are considered further in the "Regulatory and Commercial Framework" supporting document.

- **WAN communications module**: This will provide the route from the customer premises to the WAN outside the premise. DCC will provide the specification for the WAN communications module as it must communicate with DCC's network. However, the specification for the WAN communications module, including the definition of the interface between the module and the smart meter/HAN, will initially be developed by the programme, in collaboration with stakeholders, to enable the roll out of smart meters prior to DCC commencing its operation under the staged implementation approach. Suppliers would own and manage the WAN communications module as it is within the premises and they manage the customer relationship. The WAN communications module must be modular and capable of being located either within the meter casing or outside of the meter.

- **WAN**: DCC will provide the WAN and manages the transfer of data. DCC provides secure access control and network management services.

[1] The HAN links different meters within the customer premises, the WAN module and the IHD (and potentially other consumer devices, such as microgeneration and load control devices).

- **Data function(s)**: This will include data management services beyond the secure communication of data and is discussed in Chapter 2.

Key requirements and issues

1.5. The two key issues considered in this document are (i) the scope of DCC and (ii) its realisation, governance and regulation.

Scope of DCC activities

1.6. There is a wide range of options for the potential scope for DCC. Wider scope could deliver significant additional benefits, but would increase programme delivery and timescale risk. Conversely, reduced scope may hamper benefit realisation. This is discussed in Chapter 2.

1.7. The scope defined for DCC's activities, particularly with respect to any meter data management or processing activities, has potential implications for existing market participants' systems and processes. Understanding the practicality and implications of including (or not) particular functions in DCC is complex and has required significant input from stakeholders. Our work with stakeholders on this issue has informed our thinking on the initial scope for DCC and on the potential for its evolution. We will work with stakeholders to continue this analysis and to help test and refine the proposals set out in this document.

Structure and realisation of DCC

1.8. The second key issue relates to how DCC will be structured and established. The realisation approach must be consistent with the regulatory framework. This is discussed in Chapter 3.

1.9. Flexibility has been one of the key factors in considering the approach for establishing DCC. Beyond delivering the benefits sets out in the updated DECC Impact Assessment[2], its business model needs to be flexible enough to enable further energy sector developments and efficiency improvements over time, for example with respect to smart grids.

Staged implementation

1.10. We have proposed a staged implementation approach to enable early realisation of benefits and support accelerated rollout. Accelerated rollout would therefore commence prior to DCC starting provision of services. The implications of this approach for the establishment of DCC are discussed in both Chapters 2 and 3.

[2] *Impact Assessment of a GB-wide smart meter rollout for the domestic sector*, DECC, July 2010

Structure of this document

1.11. The remainder of this document addresses aspects of DCC's business model as follows:

- Chapter 2 sets out our proposals for the scope of DCC's activities;
- Chapter 3 sets out our proposals for the structure, realisation, governance and regulation of DCC; and
- Chapter 4 summarises our key proposals and sets out our next steps.

2. The Scope of DCC

This chapter addresses the scope of activities to be undertaken by DCC. The discussion of DCC's scope centres on the extent to which DCC should provide meter data management services beyond secure communications and data carriage.

Question 1: Do you agree that access control to secure centrally-coordinated communications, translation services and scheduled data retrieval are essential as part of the initial scope of DCC?

Question 2: Do you agree that meter registration should be included within DCC's scope and, if so, when?

Question 3: Should data processing, aggregation and storage be included in DCC's scope and, if so, when?

Question 4: Do any measures need to be put in place to facilitate rollout in the period before DCC service availability and the transition to provision of services by DCC, for example requiring DCC to take on communications contracts meeting certain pre-defined criteria?

Determining the optimum scope of DCC's activities

2.1. There is a broad potential range to DCC's scope of activities. Stakeholder feedback has ranged from a view that DCC should focus exclusively on a simple communications infrastructure for energy meter readings, through to a view that it should play a key role in the rationalisation of the energy industry and that it should make available its route into every home for a range of value-added services to other sectors.

2.2. It is critical to establish the correct scope within this range, to ensure DCC can deliver the programme business case on time and at an appropriate risk level, while providing the opportunity to respond to industry developments over time.

2.3. If DCC's scope is too narrow it may not achieve economic efficiency, the effective functioning of the market may be impeded and significant benefits will not be realised. If DCC's scope is too broad, the scale and complexity of the required change will increase significantly with risks to timescale, cost and performance.

2.4. The assessment must also recognise that for many years smart metering will co-exist with traditional metering. Hence, DCC's scope must be appropriate for the period in which the industry has to maintain parallel processes and systems.

The potential scope of DCC's activities

2.5. The potential scope can best be illustrated in two dimensions, communications and data management:

- **Communications:** DCC will deliver a GB-wide communications network for smart meters. This is a key capability, which could be used to provide a range of services within the energy industry and, over time, potentially to other service industries.
- **Data management:** DCC will transfer data across the GB-wide communications network. DCC could play an active role in the management of that data. Centralisation of certain data management functions could open up major opportunities for streamlining of the relevant energy industry processes.

2.6. DCC's scope could comprise different combinations of communication and data management activities. These activities are elaborated below.

Communications enabled activities

Basic Services

2.7. **Secure communications network and access control:** At its simplest level, DCC could provide a secure GB-wide communications network. Suppliers would be responsible for their own readings and for ensuring other parties receive appropriate data.

2.8. **Security monitoring and assurance:** In addition to secure communications and access control, DCC would be in a position to provide a number of services relating to the security of the end-to-end communications system including security monitoring and assurance.

2.9. **Translation services:** The communications network would need to manage multiple communications and meter language types. These need to be translated into a common format. The relevant messages then need to be routed to multiple participants. For example, a reading on change of supplier needs to be passed to new suppliers and agents. In technical terms, this function is enabled by what is commonly referred to as 'head ends'. DCC could provide these services (i.e. host all head-ends to ensure interoperability in the change of supplier processes).

Future Proofing

2.10. **Smart grids:** The communications network could be used to provide services to facilitate the development of smart grids, for example network planning and active network management. Enabling smart grids is an key Government objective.

2.11. **Extra-industry services:** The communications network could be used to provide services to other industries, for example, to support smart water metering in the water industry.

2.12. **Consumer value-added services:** Government or industries servicing consumers could use the communications network for a range of consumer services. These could include, for example, tele-healthcare and home security services.

2.13. The development of the above services does not need to take place in a sequential manner.

Industry functions

2.14. **Scheduled data retrieval:** DCC could provide a service to take suppliers' meter reading requests and schedule them in appropriate blocks, obtaining the data and routing it back to suppliers and other authorised parties in an efficient manner.

2.15. **Meter registration:** The industry maintains registers of which meters are sited at which properties. Registers of electricity meters are maintained by distribution network operators (DNOs) and independent DNOs (IDNOs) under the Meter Point Administration Service (MPAS). The main register of gas meters is managed by xoserve, through the Supply Point Administration (SPA) service. Independent gas transporters (IGTs) manage their own registers. DCC will need access to a database of all domestic meters in Great Britain to support its activities. There is therefore a case that DCC should become the central meter registration agent. Alternatively, DCC will need to have access to the existing registration systems in a similar fashion to the way the current arrangements operate in the industry whereby authorised parties download copies of the relevant registration data on a regular basis.

2.16. **Change of supplier processes:** The introduction of smart metering provides the opportunity to streamline the change of supplier processes more generally. This could involve centralisation in DCC of the change of supplier process based on registration and meter read data. If DCC is responsible for data retrieval, then the change of supplier read could be retrieved and stored centrally.

2.17. **Data processing:** Data processing has two broad levels. At a simple level, it involves checking the validity of the meter readings. At a more complex level, it is used to estimate and calculate a supplier's energy usage. In electricity, these functions are decentralised and carried out by data collectors on behalf of suppliers. In gas, they are centralised through xoserve.

2.18. **Data aggregation and storage:** Data aggregation involves aggregating customer consumption data for suppliers. In electricity, aggregation is carried out by data aggregators on behalf of suppliers. In gas, data aggregation is centralised in xoserve. If DCC retained data to enable it to provide these services, it could also provide services to other entities, for example information to DNOs on network usage. If DCC were to provide data services, then it would need to ensure that the

data is secure within DCC and that it could only be accessed by the appropriate authorised parties.

2.19. **Supplier volume allocation:** this process involves allocating consumption to appropriate settlement periods to establish the cost to each supplier. This is part of the settlement process, which is managed centrally by ELEXON for electricity and xoserve for gas.

2.20. These activities are broadly sequential, meaning that they need to be developed in sequential order, with the exception of meter registration that could be introduced at various points.

Evaluating the scope of DCC's activities

2.21. The definition of the optimum scope has been the subject of extensive analysis and stakeholder engagement. Over the past six months we have received stakeholder contributions from a wide variety of industry participants and potential service providers. These included two evidence gathering sessions focused on DCC's scope and realisation, and over twenty helpful and informative written submissions covering the advantages and disadvantages of the various DCC scope options. We are very grateful for these contributions. The views of stakeholders are summarised below.

2.22. **Secure communications and access control:** There was broad consensus that two-way communications, access control and security management were critical requirements for DCC. Some stakeholders felt DCC's role should be limited to this aspect, providing maximum freedom to its users. Others felt this was inadequate to deliver the full benefits of smart metering. There were differing views on the model for the provision of access control. Some stakeholders felt that DCC should have a 'keymaster' role, whereby it allocates secure keys for suppliers to then access the network at their discretion. Others felt that DCC should have a 'gatekeeper' role, whereby keys are held centrally by DCC and not distributed. While the model for the provision of access control needs further definition, we agree that this is an essential part of the DCC service.

2.23. **Translation services:** Several stakeholders argued translation services were vital to achieve cost effectiveness and interoperability. Provision of this functionality would also enable direct provision of information to other authorised parties, such as DNOs to facilitate the development of smart grids. Some stakeholders considered these functions could be provided directly by suppliers, who could then control the extent of functionality, the associated cost and the impact on existing systems. We consider that DCC providing this service is very important to ensure interoperability. It will also provide early benefits by enabling provision of information to authorised third parties and a more robust platform to facilitate the development of smart grids. This will enhance the change of supplier process and the consumer experience as well as enable cost savings by individual market participants as they would not be required to provide and support multiple translation services.

2.24. **Smart grids:** DCC, and its services, will be able to support some smart grid-related functions. This includes provision of from the outset better network data to inform planning and investment decisions from the outset. The initial functional requirements for these services are set out in the "Statement of Design Requirements" supporting document. Subject to further analysis, DCC will be expected to be capable of adding other functions to support smart grids when there is demand for added services (for example, remote management of smart appliances).

2.25. **Extra-industry services/consumer value-added services:** Extra-industry services are meter data communication services to other industries, such as the water industry. Government or industries servicing consumers could use the network for a range of consumer services, such as tele-healthcare services. Communications service providers support the inclusion of these services in DCC. There is, however, concern that DCC may focus too strongly on these revenue-generating opportunities at the expense of the core energy industry services. We consider that the initial focus should be on core energy industry services to ensure risks are managed. We note the views of communications service providers and suggest that the potential for these extended services should be considered over time. However, given DCC's exclusive position in the market, we propose to limit its ability to offer energy management or efficiency services. .

2.26. **Scheduled data retrieval:** DCC could schedule the retrieval of data from the meters to control and be able to forecast the load/traffic on the communication system. The alternative is to allow users to retrieve data as they wish. Some service providers stated that DCC should schedule the retrieval of data on behalf of its users for example monthly meter readings, to optimise use of the communications network. Some suppliers considered that this should be optional, believing they can undertake scheduled data retrieval at lower cost and with greater flexibility. There were some differing views regarding scheduled readings (e.g. monthly usage reading) and ad hoc reads (e.g. at change of supplier). There was strong desire for flexibility on the latter. We consider that scheduled reads should be included in the initial DCC scope to ensure cost efficiency in the establishment and operation of the communications network. Suppliers should also be able to request ad hoc readings at any point in time.

2.27. **Meter registration:** This is an area that has attracted very different views from stakeholders. DCC will ultimately need a database of all domestic and, potentially, non-domestic meter points in Great Britain. Some stakeholders have argued that it should therefore take over this role from the outset whereas others were strongly opposed.

2.28. The advantages of centralising meter registration within DCC are that this would reduce the overall cost to the industry, by avoiding the need for multiple registration systems, and enable the rationalisation of some industry activities. It would provide an opportunity to ensure consistency of data across the industry and hence reduce cost and enhance customer experience, particularly with respect to change of supplier. Advocates argue that DCC’s performance would otherwise be compromised by poor quality data from existing systems. Furthermore, there is a

view that existing systems are outdated and cumbersome, and any changes to these existing systems to support smart metering would be disproportionately expensive and nugatory work.

2.29. The disadvantages are that building a central registration system could delay the establishment of DCC. This would also increase the extent of industry change and hence the risk incurred when DCC starts provision of services. Furthermore, as data is transferred from the existing systems to the new central registration system, there would be no mechanism to assess if it was correct, and so DCC would need to manage issues around the quality of legacy data. Parallel support for the legacy environment would be required for a number of years. Meter registration is also seen by network operators as a key activity as meter points are effectively the connection points to their networks. They are therefore concerned about losing control of meter points and the resulting impact this may have on their network management activities.

2.30. On balance, we consider that meter registration should be included in DCC's scope over time. However, we recognise the diverse stakeholder views and will be continuing to gather additional evidence (including relevant costs and benefits data) to determine whether meter registration should be included in the initial DCC scope or at some later time.

2.31. **Data processing, aggregation and storage:** Some stakeholders argued that no change was required here to deliver the programme benefits. Other respondents argued that centralisation and commonality across gas and electricity would deliver significant benefits through streamlined processes, the prevention of data duplication and rationalisation of IT systems. We agree that there could be benefits in including these activities within DCC. However, this would need to be subject to further analysis and a cost/benefit case. We do not consider that it is appropriate to include these activities in the initial DCC scope.

2.32. **Supplier volume allocation:** Stakeholder consensus was that this should only be considered as part of a longer-term broader industry change and transformation. Views were expressed that these are complex functions that currently form part of an integrated process managed by ELEXON and xoserve. We concur with this view recognising the longer-term potential for industry streamlining. We will continue to investigate whether any additional functions should subsequently be brought within the scope of DCC's activities and the mechanisms available for facilitating this. At this stage, we envisage that DCC will not absorb settlement functions from the existing central bodies.

Proposed approach to the Scope of DCC's activities

2.33. Figure 2 presents three sets of potential DCC functions. Those presented in grey represent our proposed initial DCC scope.

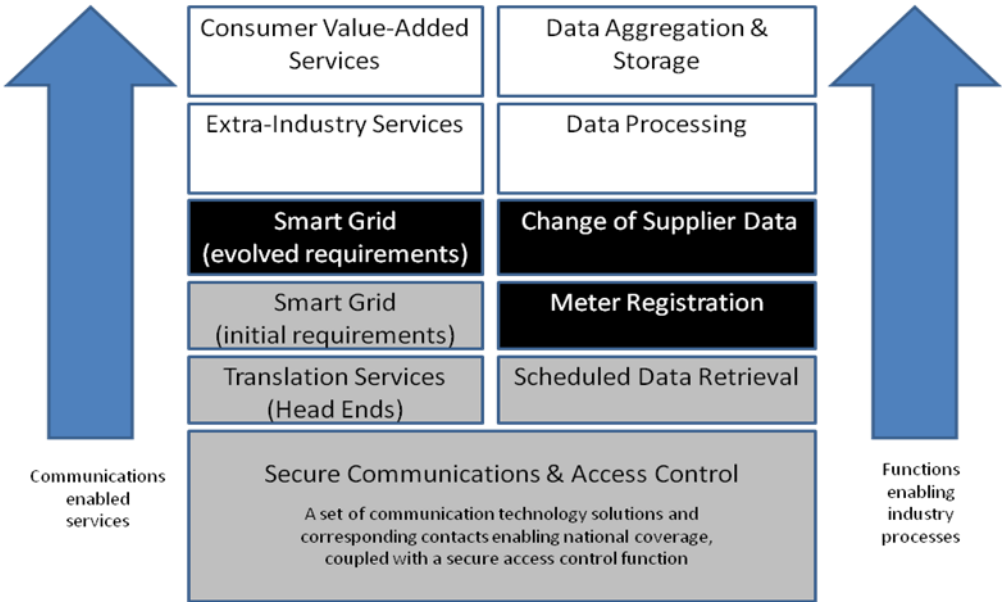
2.34. Those presented in black represent functions and services that we believe should be enabled by DCC overtime but the timing of which is currently uncertain and requires further analysis. We note that:

- Smart grids (evolved requirements): DCC will be required to set out plans for enhancing communications services as smart grid requirements evolve. This will allow the WAN communications specification to be upgraded when future network requirements are more certain and at the point the relevant contracts for provision of communication services are retendered; and
- Change of Supplier: This can initially be limited to retrieval and storage of change of supplier readings, and the provision of this reading to parties that need it.

2.35. Those presented in white represent functions and services, the inclusion of which in the DCC's scope requires further analysis. We note that:

- Where the case is made for the inclusion of any additional data processing activities in DCC's scope, this may need to be brought forward through normal industry changes or further primary legislation; and
- We consider that DCC should only be allowed to provide extra-industry or value-added services after it has stabilised its core functions, and subject to a range of performance and governance constraints.

Figure 2 – Potential scope of DCC's activities



2.36. Drawing on the stakeholder feedback received to date, and taking into account the factors outlined above, we have evaluated the case for the centralisation of individual activities and services in DCC. We have drawn the following conclusions:

- There is a clear case that secure two-way meter communications and access control should be part of the initial DCC scope;
- There would seem to be convincing commercial and technical reasons for having translation services and scheduled data retrieval in the initial DCC scope;
- At least initially, meter readings should only be stored centrally to the extent necessary to support industry processes (such as change of supplier processes) in order to minimise any privacy concerns;
- We do not propose to include supplier volume allocation, a central settlement function, in the DCC scope in the short or medium term.

2.37. There are differing views on whether meter registration and additional data management functions (pre-settlement data processing) for gas and electricity, or electricity only, should be included, either initially, or at a later date. We will evaluate the inclusion of these functions, and their timing, further.

2.38. These initial conclusions form the basis for the following proposed approach to the initial DCC scope. Our analysis suggests that this approach would provide functionality to secure the majority of the benefits of smart metering with efficient change to existing industry processes and systems that facilitates the delivery of the programme within the required timeframe.

Initial scope

2.39. The proposed initial DCC scope is outlined in more detail below.

2.40. **Secure communications network and access control:** A secure, GB-wide communications network providing two-way access to smart meters. The communications network will have to provide coverage to smart meters at over 27 million premises across Great Britain. International experience and stakeholder contributions have made clear that a range of suitable WAN technologies could be deployed to meet the GB requirement. A single WAN technology could provide the majority of coverage, with selective 'in-fill' using other technologies, or a blend of technologies could be deployed to suit local circumstances. Technologies could also be used in various combinations along the communications path from meters to DCC's management systems.

2.41. From a total cost perspective there will be trade offs between different technologies. Technologies will differ with respect to their technology upgrade cycles (potentially requiring visits to premises to upgrade WAN communications modules) and the degree of network infrastructure investment required. Technologies requiring significant network investment must achieve a certain 'critical scale' in order to be viable and may require contract lengths of around 7 to 10 years to recover initial investments. The programme will not specify WAN technology. Instead, the communications technology(s) will be determined by DCC as part of the processes undertaken to procure the communication services.

2.42. **Security monitoring and assurance:** The DCC will play an important role in protecting the security and privacy of the end-to-end smart metering system. As all

communications will go through the DCC its services will need to be designed and constructed with appropriate security to protect data privacy and security, and the functionality of the system. To assure appropriate protection, a security policy and detailed framework will be developed. Requirements for the security of the smart metering system are set out in the "Statement of Design Requirements" and the "Data Privacy and Security" supporting documents.

2.43. **Translation services:** DCC will provide translation services to achieve translation to a common protocol. It is anticipated that DCC will generate Data Transfer Catalogue or UK Link flows, which can then fit into existing industry processes with minimum change. This is subject to further design work as new messaging types will be required.

2.44. **Scheduled data retrieval:** DCC will process scheduled reading requests from suppliers. Requests for readings will be sent to meters where relevant, with readings passed back to authorised parties. Suppliers will also be able to request ad hoc readings at any point in time.

2.45. **Smart grids:** DCC will also need to ensure it meets the functional requirements designed to facilitate smart grids. Appendix 2 outlines our current understanding of the initial requirements related to smart grids and their implications for the DCC communication services.

Question 1: Do you agree that access control to secure centrally-coordinated communications, translation services and scheduled data retrieval are essential as part of the initial scope of DCC?

2.46. In addition, DCC will provide operational management and administrative services. These are described briefly later in this chapter.

Meter registration and change of supplier processes

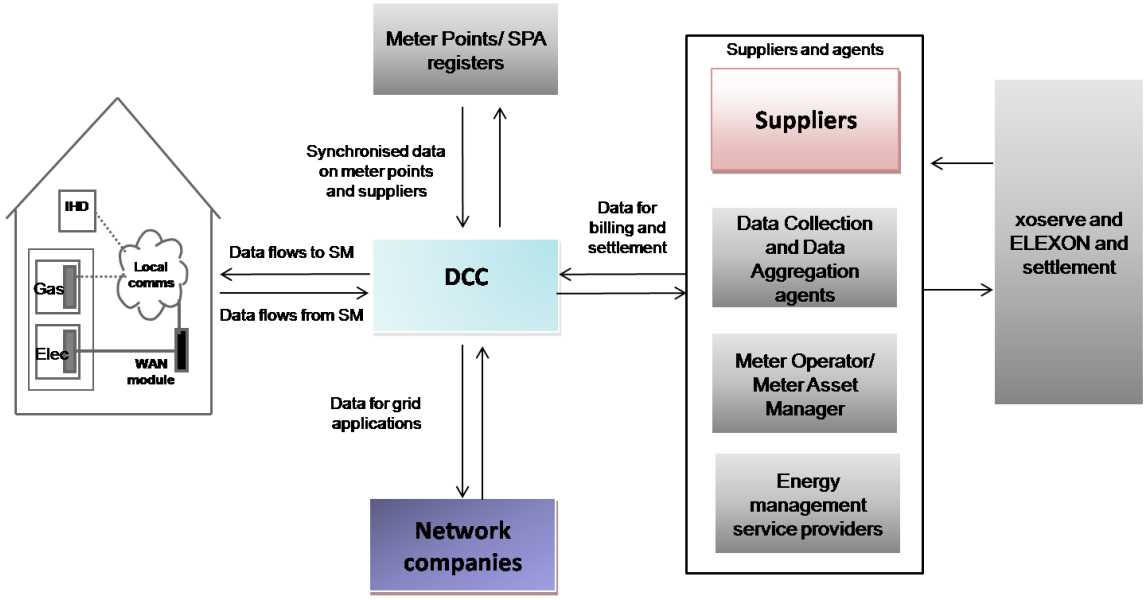
2.47. As noted earlier, we believe that DCC should take on responsibility for meter registration over time. This would allow sunsetting of the MPAS and removal of the dependency upon DNOs, for whom this is not core business; removal of SPA systems; co-ordination across electricity and gas with a single premise database improving data accuracy; and data cleansing activity in tandem with the change.

2.48. Furthermore, establishing the DCC provides the opportunity to streamline the change of supplier processes. This could involve centralisation in DCC of the change of supplier processes based on registration and readings data. Initially, this could be limited to retrieval and storage of change of supplier readings, and the provision of these readings to authorised parties that need them.

2.49. The timing of the inclusion of these activities in DCC's scope has not yet been determined pending further analysis. If meter registration is not included in the initial scope of DCC, meter details will be obtained by interfaces to MPAS and SPA. DCC will

build a smart meter database as meters are added, paving the way for potential transition to becoming the meter registration agent at an appropriate time. The high-level view of the initial scope of DCC if meter registration is not initially included is shown in the figure below:

Figure 3 – Initial scope of DCC if meter registration is not included



Question 2: Do you agree that meter registration should be included within DCC's scope and, if so, when?

Future scope of DCC Activities

2.50. It is clear from stakeholder feedback that there are many arguments for and against the scope of DCC including additional data management activities, such as data processing and aggregation. Centralisation of these activities could achieve economies of scale and remove the need in electricity for each supplier to have its own systems and processes. However, significant efficiency gains are expected from the proposed initial DCC scope and the greater the initial DCC scope, the more time it is likely to take stakeholders to implement the necessary changes.

2.51. We do not propose to include additional data management activities within the initial scope of DCC activities. However, we welcome views on whether these activities should be included at some future time. This consideration would also need to include data privacy issues as well as, given DCC's exclusive position in the market, any potential impact on the competitive markets for energy-related services.

Question 3: Should data processing, aggregation and storage be included in the DCC's scope and, if so, when?

2.52. We recognise the commercial potential of using the communications network for smart metering to provide value-added services to customers. While this may significantly increase the commercial attractiveness of DCC, with the potential to drive down costs and benefit the industry and therefore consumers, it needs to be approached carefully. Such activities must not compromise the delivery of DCC's core electricity and gas smart metering services. Consideration also needs to be given to the availability of infrastructure capacity to meet future core service demands, integrity of data privacy and security privacy arrangements and any DCC organisational capacity constraints.

2.53. There is a wide range of options for the future scope of DCC activities. Delivering of broader industry reforms are outside of the scope of the Smart Metering Implementation Programme and can be addressed through normal industry processes. The programme will keep this under review and should the case be made for further changes, would seek to bring these forward through normal industry changes or further legislation. The implications of smart metering on settlement is considered in the "Regulatory and Commercial Framework" supporting document.

The way forward on finalising DCC's scope

2.54. We have outlined here our proposal for DCC's initial scope. We recognise that this is a complex area with varying views across stakeholders and will seek to underpin and verify the position through cost/benefit analysis developed alongside stakeholders. In particular, we note finely balanced views on the issue of whether meter registration is essential to the initial scope of DCC.

2.55. While the stakeholder contributions have confirmed the importance of the 'data management' issues for industry participants, they have also highlighted a number of challenges, including the divergence of views, the complexity of the analysis required and the dependency on detailed contributions from industry.

2.56. Accordingly, the programme intends to continue to work with stakeholders to undertake further cost/benefit analysis to confirm the basis for the initial scope. We will also continue to investigate whether any additional functions could subsequently be brought within the scope of DCC's activities and the mechanisms available for facilitating this. The analysis will be facilitated by the programme team in parallel with this consultation process in order to inform final decisions. This is outlined in more detail in the "Implementation Strategy" supporting document.

2.57. The integration of DCC into existing industry systems and processes will be a major change, requiring rigorous analysis, design and delivery, risk and change management. DCC will play a critical role in this programme and will provide leadership in the testing and trialling of the complete end-to-end smart metering system prior to DCC Go Live. This is also considered in the "Implementation Strategy" supporting document.

DCC's operational services

2.58. In addition to providing its core services discussed above, as part of the initial scope DCC will need to provide 'support' services to underpin the efficient operation of smart metering. Our proposals for these include:

- Design and accreditation services: DCC will undertake the design, specification, accreditation and security compliance of components such as the WAN communications module, to assure the end-to-end performance of the communications network. The WAN design and functional specification will include definition of the interface between the WAN communications module and the smart meter/HAN. The specification for the WAN communications module will initially be developed by the programme, through the two Expert Groups, to enable the roll out of smart meters prior to DCC commencing its operation under the staged implementation approach.
- Security management: In addition to providing the core secure communications and access control services it is expected that the DCC will provide additional services to support the end-to-end system such as security monitoring, incident response and ongoing security assurance. It is noted that the security requirements will also be developed by the programme and prescribed in the Smart Energy Code.
- Advisory services: DCC will provide advisory and operational support services to service users. This support might include liaison with suppliers' rollout planning exercises.
- Help desk: This would be a business-to-business contact point for DCC's service users (DCC will not have direct contact with energy customers).

2.59. In delivering the minimum set of services, DCC will have to perform at least a basic set of network management functions, for example checking that a smart meter has sent back the information requested by a service user. DCC's scope of services may be extended to provide a variety of more sophisticated network management services. These services could include:

- Monitoring the 'connection health' of WAN communications modules;
- Scheduling services to ensure that network usage is optimised;
- Verification of smart meter transmissions (i.e. checking that DCC has received a scheduled message from every meter that it expects to receive one from); and
- Monitoring for security integrity.

2.60. We will continue to work with stakeholders in parallel with the consultation to help us understand in detail service providers' data and communications capabilities, and the cost implications of different user requirements scenarios. This will also further develop details around DCC's services and their required performance in order to inform final decisions.

Staged Implementation – enabling rollout prior to DCC Go Live

2.61. In order to bring forward the start of rollout and help deliver early benefits, we are proposing a staged approach to implementation under which suppliers will start to install smart meters ahead of DCC being established.

2.62. Suppliers will have to ensure that meter installations, communications, data requirements and security requirements meet the minimum requirements defined in the common technical specification and that customers can continue to switch supplier without impediment.

2.63. From autumn 2013 when DCC is expected to start providing services, it will be responsible for supporting communications with all meters compliant with the technical specifications. Between the point at which licence modifications mandating rollout targets are implemented and DCC service availability, suppliers would be responsible for procuring their own communications services. Communications contracts entered into by suppliers would need to be either of limited duration or capable of being novated to DCC once it commences provision of services.

2.64. Once DCC service provision is fully established, suppliers will be required to use these services for all WAN communications with smart meters in the domestic sector. This includes all meters installed prior to that time that comply with the relevant technical specifications. It is important that this does not entail a further visit to change the communications module, for example.

2.65. To provide certainty to suppliers looking to invest and to protect the interests of customers, specific arrangements may need to be put in place to facilitate this process. For example, DCC could be required to take on communications contracts agreed by suppliers ahead of DCC being established, where these contracts meet certain pre-defined criteria. We are also considering earlier measures that may be necessary around interoperability in order to help ensure consumers will not face barriers in switching suppliers.

Question 4: Do any measures need to be put in place to facilitate rollout in the period before DCC service availability and the transition to provision of services by DCC, for example requiring DCC to take on communications contracts meeting certain pre-defined criteria?

3. The Structure and Realisation of DCC

This chapter considers the structure of DCC and how it can best be established. It also sets out our proposed approach to the governance of DCC.

Question 5: Do you agree that the licensable activity for DCC should cover procurement and management of contracts for the provision of central services for the communication and management of smart metering data?

Question 6: Do you consider that DCC should be an independent company from energy suppliers and/or other users of its services and, if so, how should this be defined?

Question 7: Do you have any comments on the steps DCC would need to take to be in a position to provide its services and the likely timescales involved?

Question 8: Do you have any comments on the proposed approach to cost recovery and incentivisation for DCC?

Options for the structure and realisation of DCC

3.1. DCC will have a pivotal role at the heart of the smart energy market. It is vital that it delivers a cost efficient and resilient service. It must be flexible to adapt to developments in the industry. It will offer exclusive services and hence must be incentivised to drive the best value for money in delivering these services, and governance and management structures must be put in place to ensure it delivers on its commitments.

3.2. We have identified and analysed a wide range of potential structures and realisation models for DCC. Best practice evidence has been sought and stakeholder views considered. We have met with Ofcom on a number of occasions to discuss the regulatory regime and the implications for the different DCC realisation options under consideration.

3.3. The options we have considered include:

(A) DCC as a full service provider: This would involve a single step in which a licence would be granted to DCC as a full service requirements provider, following a competitive licence application process. The licence would set out DCC's service obligations and regulated revenue. Under this option the applicant for the DCC licence could be either a single entity or a consortium of data and communication service providers.

(B) DCC as a procurement and contract management entity: This would involve a two-stage approach, as follows: (i) DCC would be established as a procurement and contract management entity; and (ii) DCC would procure, on a competitive

basis, a number of service providers that would together deliver the full scope of the data and communications services required. DCC would be prohibited from also acting as a service provider. There are two variants to this approach:

(B1) A licence would be granted to DCC following a competitive licence application process.

(B2) The licence of an existing licensee would be modified to require the licensee to establish a separate entity to undertake the procurement and contract management activities. Under this approach, procurement and contract management would not be a new licensable activity.

(C) Licences would be granted following a competitive licence application process to separate data and communications companies.

(D) Licences would be granted to a single data company and separate regional communications companies to enhance competition in the provision of communication services.

Proposed approach to DCC's realisation

Evaluation of models for realisation

Structure – single or multiple entities

3.4. The first stage of our analysis considered the option of having multiple regional DCCs for data and communications (a variant of Option D above) rather than a single GB-wide DCC. We concluded that this option should not be brought forward to full assessment as it would constrain DCC's ability to effectively carrying out data management functions, which would require a centralised data function on a GB-wide basis.

3.5. To maintain the ability of DCC to effectively carry out a centralised data management function, we considered whether licences could be granted to a single GB-wide data company and separate regional communications companies (Option D). The advantage of this option would be the ability to provide comparative cost benchmarks by using regional communications providers. However, our analysis indicated that it would be preferable to allow DCC to contract for communications service providers on a regional basis, if this were shown to outweigh any economy of scale benefits, rather than create separate regional communications licensees.

3.6. As part of this stage of analysis we considered in detail the issue of whether the DCC functions could be better delivered by a single (Option A or B) or separate data and communications entities (Option C). This evaluation concluded the following:

- A single entity is essential to reduce the complexity of integrating DCC into the industry systems and processes, and to reduce the integration risk between separate data and communications companies; and

- A single entity provides a single point of contact and accountability, which stakeholders have indicated is a key requirement.

3.7. On the basis of this first stage of our analysis, Options A and B were favoured in comparison to Options C and D and brought forward to further analysis.

Licence modification or new licence

3.8. The second stage of our analysis considered whether DCC could best be established by granting a new licence or modifying an existing licence to require the licensee to establish a separate entity to undertake the DCC activities (Option B2). Under this option, the DCC activities would not be a new licensable activity.

3.9. The evaluation of the two approaches concluded that the grant of a new licence would be preferable to an approach based on requiring an existing licensee(s) to establish the DCC. Grant of a new licence ensures the role of DCC is contested and will offer more scope to oversee the activities of the new body during the important rollout period. Importantly, grant of a new licence enables measures to be put in place to provide for the independence of DCC from key users of its services to ensure equal treatment of its users.

3.10. On the basis of the second stage of our analysis, Options A and B1 were brought forward for full analysis.

Full requirements service provider or procurement and contract management entity

3.11. The third stage of our analysis considered Option A and B1 as follows:

- Option A: Grant of a licence following a competitive applications process to a full requirements service provider; and
- Option B1: Grant of a new licence following a competitive applications process to a procurement and contract management entity.

3.12. The evaluation of Option A and Option B1 against the programme evaluation criteria concluded the following:

- **Consumer impact:** In both of the options, DCC will not deal with consumers directly so consumer impact would be indirect and via suppliers. However, any industry change would be easier to implement under the more flexible procurement and contract management approach (Option B1), which would allow DCC to work with industry to implement change, for the benefit of consumers.
- **Benefits delivered**: Both of the options are capable of delivering the benefits but the procurement and contract management approach in Option B offers more flexibility than grant of a full requirements licence to a single entity. This will be especially valuable with respect to future industry change and the development of smart grids.

- **Cost**: The procurement and contract management approach in Option B1 would be expected to lead to strong competition, allowing DCC to select providers offering the best service/technology and value for money in specific service areas, and to retender services on as needed basis. Granting a licence to a full requirements service provider in Option A would likely mean selecting a consortium that might not offer the optimal mix of service providers, leading to higher overall costs. Unanticipated industry change would also likely be more expensive to achieve in Option A as it may not allow for the same flexibility in procuring and integrating additional services and service providers. Competitive pressure on DCC itself would be maintained by granting a licence with a limited term and carrying out a new licence application process to allow for the grant of a new licence at the end of each licence term.
- **Risk**: Industry has more experience with the procurement and contract management approach under Option B1 through the activities of existing central bodies that currently have similar functions, This arrangement has been shown to cope well with changing industry requirements. The procurement and contract management would also help to reduce risks of service providers' "lock in" at the end of their contract terms.

Proposed Approach

3.13. Our proposed approach is to grant a licence, following a competitive licence application process, to DCC as a procurement and contract management entity (Option B1). A key role for this entity would be to run competitive tenders to procure a number of service providers, which would together deliver the full scope of the data and communications services required.

3.14. Our analysis has concluded that this model would offer greater flexibility to respond to industry process and service requirements change. We also consider that the procurement and contract management entity would have the capacity to operate closer to industry and hence would be able to contribute more effectively to the implementation of any change in DCC services. It would also offer the prospect of more effective procurement of service providers, combined with maintaining more effective downward pressure on costs through the retendering of individual service provider contracts. DCC itself could be incentivised in a flexible manner to meet agreed performance outputs.

3.15. This option is also consistent with stakeholder feedback received by the programme team. Furthermore we consider a new licence to be preferable to modification of existing licences because:

- The competitive licence application process for granting the new licence would ensure that the best value for money is delivered for the users of the DCC services.
- If a competitive process is run to grant a new licence, existing bodies could apply to be DCC individually or as part of a consortium.
- We consider that, given the scale of the required communication services, there is benefit in attempting to attract providers from outside the industry.

- Grant of a new licence enables measures to be put in place to provide for the independence of DCC from key users of its services to ensure it does not discriminate between them.

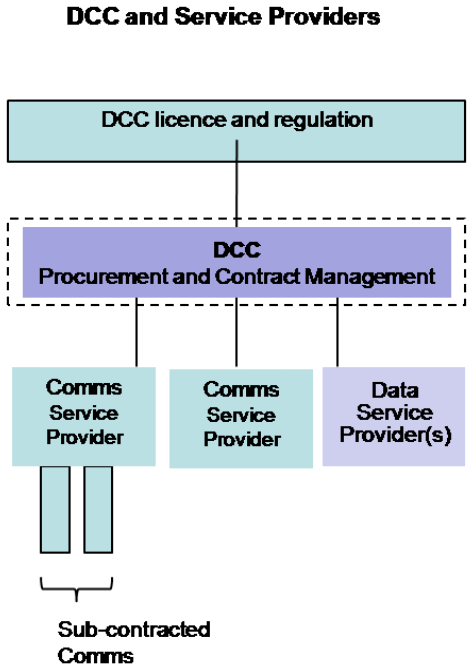
3.16. In addition, our analysis indicates that:

- A single entity is essential to reduce the complexity of integrating DCC into the industry and to reduce the integration risk between, for example, separate data and communications companies.
- A single entity provides a single point of accountability, which stakeholders have indicated as a key requirement.

Establishing DCC

3.17. An example of the proposed model is shown in Figure 4. In this example DCC procures two communications service providers and one data service provider. One of the communications providers in turn engages subcontractors. There are clearly a number of potential variants in terms of the number and type of service providers, and the procurement process undertaken by DCC will help identify the optimum solution.

Figure 4 – Proposed model for establishing DCC



3.18. Establishment of DCC and its services would involve a two-stage approach:

- A new licence will be granted to DCC as a procurement and contract management entity following a competitive licence application process.
- DCC would procure, on a competitive basis, a number of service providers, which would together deliver the full scope of the data and communications services required.

3.19. We will consider further what steps could be taken to minimise the timescales needed for DCC to set up services and to enable applicants to provide information as part of the application process on how they would expect to provide the services. Further, one possibility might be whether shortlisted bidders could be invited to bring a portfolio of potential contracts with service providers to the last stage of that process.

3.20. We recognise that DCC would have an exclusive position that requires sound governance and management. Compared to other options, the proposed DCC model mitigates some of the related risks as follows:

- DCC can select multiple service providers, whose contracts can be constructed to expire at different times. This increases the ability to test the market on a regular basis. For example, individual service providers who underperform could be replaced without changing the entire set of contractors
- DCC's core capability will be in procurement and contract management. However, it will be able to gain and retain knowledge of the full range of DCC's activities and services.
- DCC's licence could be granted for a limited term such as ten years, with provision to extend the term or carry out further competitive process for the grant of a new licence at the end of the term.

Regulatory basis for the creation of DCC

3.21. The Energy Act 2008 gives the Secretary of State wide powers to implement the Smart Metering Implementation Programme. The Secretary of State may amend the Gas Act 1986 and Electricity Act 1989 to introduce a new smart metering licensable activity, and may make new regulations which allow the Authority to grant a licence for the new licensable activity following a competitive licence application process. The Energy Act also provides the Secretary of State with powers to make amendments to existing licences and industry codes to implement the smart metering regulatory regime.

3.22. DCC will be the first industry organisation to provide services across the gas and electricity sectors. It will therefore be necessary to grant two new smart metering licences to DCC, one under the Gas Act 1986 and one under the Electricity Act 1989. For simplicity, this chapter refers to licence in the singular.

3.23. As part of the overall smart metering regulatory regime we are proposing that there will be a Smart Energy Code. This will be a key instrument in regulating DCC's interfaces and relationships with the industry.

3.24. Procuring and managing communications service contracts will be essential functions of DCC. The programme has therefore met with Ofcom on a number of occasions to discuss the regulatory regime it administers under the Communications Act 2003 and the Wireless Telegraphy Act 2006 and the in particular implications for the different realisation options under consideration.

DCC's licence

3.25. The principal steps in the grant of a new licence would be as follows (some of these could be undertaken in parallel):

- **Scope of new licensable activity:** A new licensable activity would be defined to broadly cover the procurement and management of contracts for the provision of central services for the communication and data management of smart metering data. An amendment to both the Gas Act 1986 and the Electricity Act 1989 would be required to introduce the new licensable activity.
- **Development of DCC Licence:** The licence authorising the new authorised activity would need to be prepared. Appendix 3 sets out an indication of the key principles that we would expect to take account of in developing the DCC licence.
- **Development of the Smart Energy Code:** It is envisaged that the DCC licence would require DCC to comply with the provisions of the Smart Energy Code, which would contain details of DCC's service requirements and the related charging mechanisms. A draft Smart Energy Code will be developed by the programme, together with stakeholders, followed by a consultation process.
- **Development of licence application regulations:** The Secretary of State would make Licence Application Regulations which would set out the competitive process to grant the DCC licence.
- **Competitive licence application process:** The Authority would carry out the competitive licence application process to grant the DCC Licence in accordance with the process set out in the Licence Application Regulations.

Question 5: Do you agree that the licensable activity for DCC should cover procurement and management of contracts for the provision of central services for the communication and management of smart metering data?

Competitive licence application process

3.26. The Authority would carry out a competitive process for the grant of the licence. We will develop our detailed proposals for the assessment criteria in the next phase of the programme but is likely to be based on a number of matters, which may include, among other things:

- Demonstrable experience in procurement and contract management of data and communications service contracts and access to resources that can further support this experience.
- Demonstration of independence of DCC from its service providers. Any party controlling the prospective licensee or controlled by it would be ineligible to bid to provide services to DCC. We will further consider whether or not DCC needs to be

fully independent from suppliers or other service users and welcome views on this issue.

Question 6: Do you consider that DCC should be an independent company from energy suppliers and/or other users of its services and, if so, how should this be defined?

3.27. We anticipate that the principal steps in DCC's procurement of its service providers would include:

- **Preparation for procurement**: Based on the service requirements defined in the Smart Energy Code, DCC will define possible contract packages for which service providers would be needed and the interfaces enabling them to operate together to provide the services.
- **Procurement**: DCC would then run competitive processes for the procurement of service providers to deliver the contract package or packages. DCC will agree contracts with its service providers with lengths that promote best cost effectiveness. It is envisaged that, if let separately, communications and any data contracts could be of different lengths.
- **Development and contract management**: Following the finalisation of the procurement processes, the necessary development work will be undertaken by the service providers to permit DCC to start offering the services defined in the Smart Energy Code. Service providers would then be managed against defined service levels in their contracts with DCC. They would not be bound directly by the Smart Energy Code but their contract with DCC would need to include provisions which would allow DCC to comply with its obligations under its licence and industry codes.
- **Testing and trialling**: DCC will be obliged to ensure integration with industry systems and processes, and driving and participating in testing and trialling to meet the DCC Go Live criteria.
- **Reporting**: DCC would be required to report on performance against service levels.

3.28. As indicated earlier, we will consider further what steps could be taken to minimise the timescales needed for DCC to set up services and to enable applicants to provide information as part of the application process on how they would expect to provide the services. For example, one possibility might be whether shortlisted bidders could be invited to bring a portfolio of potential contracts with service providers to the last stage of that process.

3.29. Based on detailed analysis of service providers' responses to its invitations to tender, DCC would need to determine the optimal packaging and terms for communications and data management service provider contracts. These decisions would need to balance factors including value for money, flexibility, integration risk, enablement of necessary capital investment and retendering to promote cost effectiveness.

3.30. We propose that the DCC licence would include a requirement for DCC to procure its services in a cost effective manner. The periodic retendering of contracts would be a key driver of the cost-effectiveness of service provision. It is envisaged that, if let separately, communications and any data contracts could be of different lengths.

3.31. As contracts with existing service providers come up for retender, we would expect DCC to keep the scope of each contract under careful review. DCC may elect to contract separately for some services (application development and hosting, for example) or to consolidate contracts for others (communications and some aspects of data management, for example)in future. We propose that DCC will be obliged to contract for services in a way that offers the best value for money.

3.32. In addition, DCC may need to manage contract amendments or introduce new contracts and new service providers to meet its potentially evolving requirements as discussed in Chapter 2. DCC will also support the associated process of any necessary industry change.

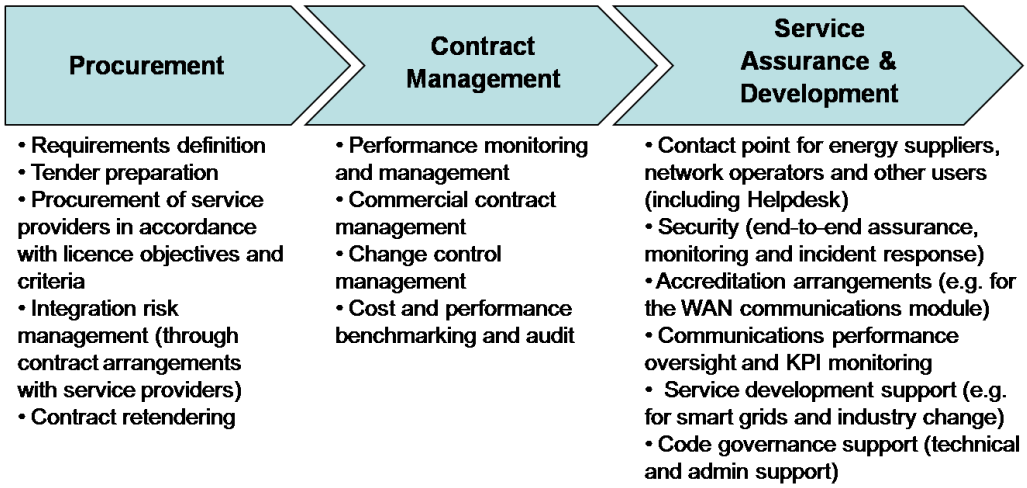
3.33. Performance measures and incentive mechanisms would be included in both the DCC licence and/or Smart Energy Code, as appropriate, and within service provider contracts. Key Performance Indicators (KPIs) and agreed rates (including against any change in DCC scope) could be included in service provider contracts to provide the best possible basis for future change implementation. If separate contracts were let for different aspects of communications and data services, then interfaces would need to be arranged.

3.34. DCC would, in its procurement and contract management role, provide continuity of knowledge about service delivery while the service providers themselves could change as each contract package reaches the end of its term and is retendered. The DCC licence would be granted for a limited term such as ten years, possibly with provision to extend the term. A further competitive process would need to be carried out to allow for the grant of a new licence at the end of the term.

Question 7: Do you have any comments on the steps DCC would need to take to be in a position to provide services and the likely timescales involved?

3.35. DCC's ongoing activities are illustrated in Figure 5 below.

Figure 5 – Ongoing activities of DCC



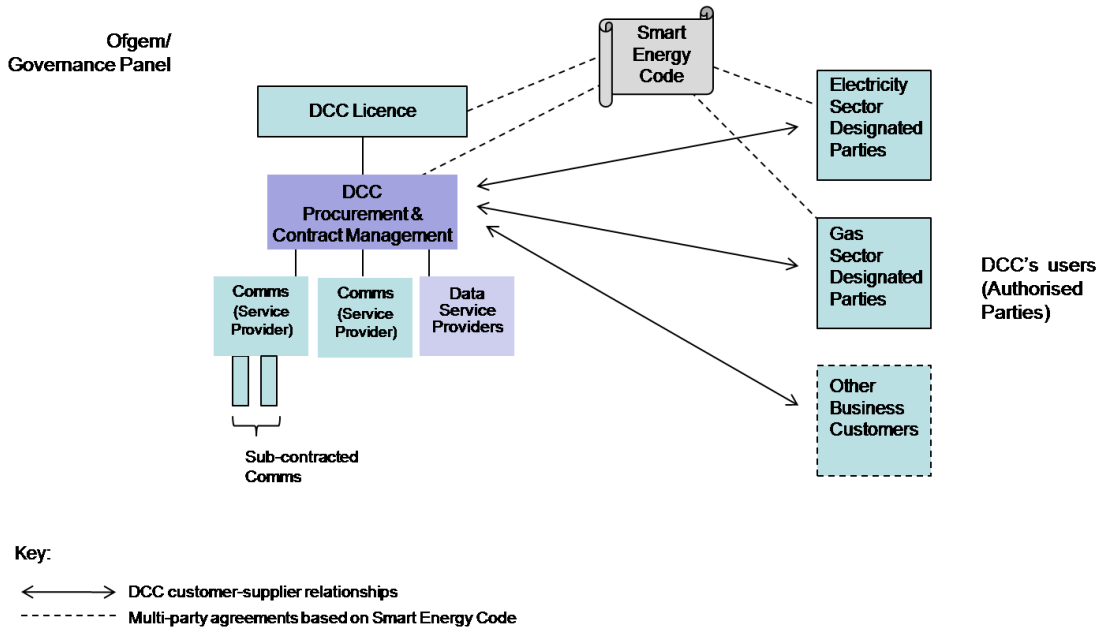
The governance, incentivisation and financing of DCC and its service providers

The governance of DCC

3.36. Regulatory oversight of DCC will be provided by a combination of the DCC licence and the Smart Energy Code.

3.37. This, and the industry context, is summarised in Figure 6 below:

Figure 6 – Regulatory oversight of DCC



3.38. It is noted that the scope of exclusivity granted to DCC will not extend to the underlying supply of communications services, which DCC will tender for on a competitive basis as and when required.

3.39. The nature of DCC is that it will be working closely with industry. It is expected that its licence will govern DCC's objectives and obligations, while the Smart Energy Code will include the details of DCC's service requirements and commercial terms, including charging terms. DCC must ensure that it complies with its obligations under its licence and the Smart Energy Code. The Authority may consider enforcement action where DCC fails to meet its licence obligations.

3.40. DCC will be in an exclusive position with respect to the provision of communications access to smart meters in the domestic sector. We therefore propose to put in place an effective incentive regime for DCC in order to promote cost efficiency and thereby provide an appropriate level of protection to users of the data and communications function. This will include the use of market mechanisms, including competitive procurement of service providers and the retendering of contracts, and regulatory incentives for DCC to manage its own costs efficiently.

3.41. DCC will be required to demonstrate to Ofgem that its competitive procurement processes comply with the relevant criteria set out in the licence. We expect that these criteria will recognise both short and longer-term factors (for example, support for a geographically dispersed rollout in the short term and maximum coverage at least cost in the long term). We also expect that contracts for services will be retendered to deliver value for money and to enable services and technologies to evolve as requirements develop (for example, for smart grid purposes).

3.42. The DCC licence will include obligations relating to the way it procures and manages the contracts with its service provider, but the obligations will not apply directly to those service providers. This means that DCC will need to ensure that the service provider contracts include appropriate provisions to enable DCC to meet its licence obligations.

3.43. DCC will be required to provide technical and administrative support to the panel responsible for the governance of the Smart Energy Code. There may be issues related to its own activities where DCC could have a conflict of interest and the relevant governance bodies may then need to form their own view or obtain independent advice. For example, changes to provisions of the Smart Energy Code related directly to DCC's governance or performance.

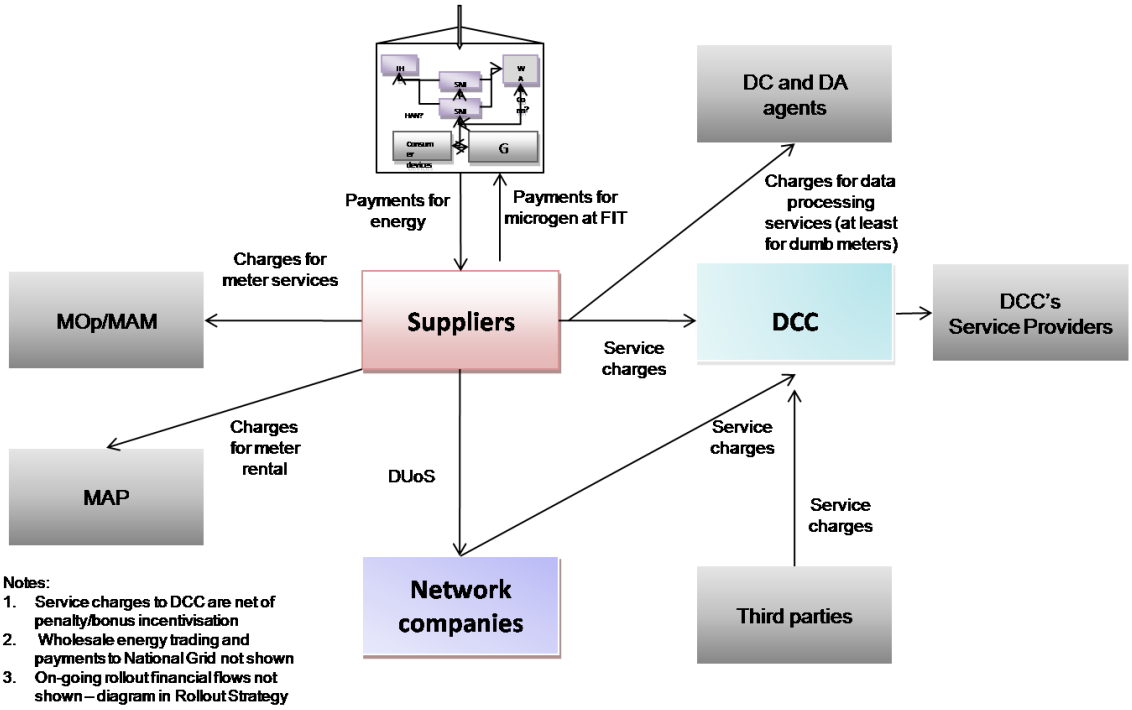
3.44. With respect to security governance, in order to ensure that the end-to-end smart metering system is protected appropriately from existing and emerging risks, DCC will be required to provide assurance on an ongoing basis that its security policy and framework is appropriate.

Cost recovery model for DCC

Overview of commercial interfaces and financial flows

3.45. Figure 7 below shows the main commercial interfaces and the financial flows between the parties involved in the smart metering system.

Figure 7 – Commercial interfaces and financial flows between the parties involved in the smart metering system



3.46. The main flows are:

- **Contractual relationships**: DCC will enter into bilateral agreements with its service providers. Relationships between DCC, the energy suppliers, network companies and other users of DCC's services would be based on the Smart Energy Code supported by a multiparty agreement to which all parties would be bound. Depending on the scope of the services to be offered by DCC, third parties could also be bound by the same agreement, or have bilateral agreements with DCC.
- **Charges to DCC customers**: All users would be charged by DCC for meter access and data services, as discussed in the following section.
- **DCC payments to service providers**: DCC would be charged by service providers for data and communications services.
- **Payments to Meter Operators (MOps) and Meter Asset Managers (MAMs)**: The energy suppliers would pay their MOps and MAMs for meter maintenance, and the Meter Asset Provider (MAP) for meter rental.
- **Payments to network companies**: As now, suppliers would pay the network companies for use of their networks. They would also pay their Data Collection and Data Aggregation agents in respect of traditional meters and for smart meters (unless DCC's scope is broadened over time to include some of these activities).
- **Customer payments**: Customers would pay suppliers' utility bills and, if they have microgeneration, they would receive the feed-in-tariff for their production, potentially based on meter data communicated via the smart meter.

Charging arrangements for industry users

3.47. DCC would need to charge the users of its services in order to recover the revenues it is permitted under the terms of its licence and the Smart Energy Code. The general principles of the DCC charging methodology are expected to be set out in its licence. The licence would require DCC charging statements to be compliant with the methodology, while its charging methodology would be set out in the Code. Any changes to the methodology will therefore need to be approved by Ofgem. DCC would be required to develop and publish its charging statement (containing a table of its charges) before it offers its services. It is noted that DCC would be allowed to charge higher rates to address the higher costs of provision of additional services requested by individual users or groups of users.

3.48. The standard charges for DCC's services need to reflect the relevant cost drivers. In line with common practice in the communications industry, the charges are likely to comprise:

- **Activation charge**: An on/off activation charge in respect of each activated WAN communications module. This would recover costs associated with bringing each WAN connection into service as well as an appropriate share of central communications costs and the administrative costs of connection set up.
- **Standing charge**: A standing, or rental charge, in respect of each WAN connection that is served, or a share of a WAN connection when two or more smart meters share a WAN connection. This would recover the cost of maintaining the WAN connection.
- **Volume charges**: A charge related to the volume of data transferred, which may be differentiated by time of day and, depending on the technology, a charge for the number of data transfers (i.e. the frequency of meter data access).
- **General charges**: A contribution to other administration and general costs incurred by DCC that are not related to any of the above direct cost drivers. As discussed in the "Regulatory and Commercial Framework" supporting document, costs of the lead supplier's WAN communications module and communication link would be shared through charges applied by the DCC to each supplier.

3.49. The question arises as to whether electricity and gas network companies would only pay volume charges and contribute to general charges or whether they would also share the activation fees and standing charges. DCC would be providing WAN connections and related services in response to the supplier-led rollout of smart meters. The suppliers are likely, at least before smart grid applications have begun to develop significantly, to be the major drivers of the data communications capacity requirements that DCC needs to deliver.

3.50. One approach for the allocation of fixed costs, if services provided to network companies do not require significant additional capability, would be to have the suppliers pay the full costs of activations and the standing charge, just as they will pay the full cost of the meter even though it will be capable of generating data for smart grid applications.

3.51. An alternative approach would be to divide the charges for the WAN connection point between the all parties on some agreed basis, which could be linked to the volume and frequency of data both require. This will ensure that the right price signals are sent to the parties that have the potential to drive DCC's costs. Under either approach, network companies would pay volume charges and make a contribution to general charges.

3.52. Until there is more detailed information available with respect to the likely communication requirements to facilitate smart grids, a choice between the different approaches is difficult to make. We therefore propose that a review be conducted as part of the development of the Smart Energy Code, before DCC starts to offer its services, in order to finalise the most appropriate charging methodology for DCC.

3.53. There would be a further specific consideration if DCC is allowed to offer access to providers of non-core value-added services, as discussed in Chapter 2. In these circumstances, there should be no cross subsidy between the core users of DCC services and non-core users (i.e. providers of value-added services) as DCC would make available access to these providers on a non-discriminatory basis. This suggests that such parties would need to be subject to all relevant charges, including to cover any initial funding requirements as appropriate. DCC will be required to focus on its core services initially, allowing for the relevant governance arrangements to be developed.

Risks and incentivisation for DCC

3.54. Three key risk mitigation areas have been identified:

- **Procurement risk**: The need to ensure that DCC appoint and contract with service providers capable of delivering the required services effectively; and
- **Flexibility and change control risk**: The need for DCC to have a clear governance structure to manage change cost effectively and efficiently..

3.55. Incentivisation needs to apply at two levels: that of DCC as the procurement and contract management entity; and that of service providers appointed by DCC through competitive procurement.

3.56. DCC's operating plan and budget would be agreed annually through the relevant governance arrangements. It is proposed that DCC would have the right to earn a margin on its own costs, subject to performance incentives. DCC's target margin and incentives would be a parameter determined as part of the competitive process for the grant of the entity's licence.

3.57. Currently all monopoly organisations within the energy sector are subject to price regulation with associated financial incentives. Given that DCC will be the monopoly communications provider to industry it is important to keep its costs as low as possible.

3.58. We are of the view that the best way to achieve the best value for customers is to provide DCC with commercial incentives where it shares some of the gains from any cost reductions during the early years of its operation and can gain from providing improved service. The incentive mechanisms employed will be set out within its licence. Incentives could be applied in relation to:

- **Target forecast costs**: This could involve the establishment of target costs such that if DCC keeps within its operating budget it will be allowed to keep a percentage of its under spend.
- **Outputs**: This could involve the determination of which key outputs will need to be incentivised (e.g. service performance levels), and then proportionally reducing DCC's allowed profit margins each time a performance target is not met. Over time these outputs may include, for example, reductions in service delivery costs.

3.59. To illustrate the first point, at the beginning of the incentive mechanism period a target cost is determined. A sliding scale mechanism would then provide DCC with an incentive to perform better than the target. For example, if DCC had a target of £5 million, and a sharing factor of £0.5 million for every £1 million below this, then if it achieved costs of £4 million, DCC would keep £0.5 million of the underspend.

3.60. Such an approach is similar to the system operator incentive mechanism under which National Grid can earn, subject to an upper and lower limit, additional revenue or suffer reductions in revenue depending on how the costs of system balancing compare to an estimate agreed with Ofgem before the start of each year.

3.61. It is envisaged that DCC's incentive mechanisms would be reviewed and updated within five years from the grant of its licence.

Question 8: Do you have any comments on the proposed approach to cost recovery and incentivisation for DCC?

Viability and financing

3.62. We expect that DCC would be a relatively small organisation as the data and communication services would be delivered by the service providers themselves. We also expect that DCC will have a small cost base relative to that of the service providers with which it contracts.

3.63. DCC's financial viability will depend on the exclusivity granted by its licence, and its licence conditions and the provisions of the Smart Energy Code, including the manageability of the risks that are allocated to it.

3.64. DCC will need to have a right to recover from its service users the cost of the contracts resulting from competitive tenders. If this is provided for, there is unlikely to be a concern about the financial viability of DCC.

3.65. DCC will need to be established before services can be delivered. As rollout of smart meters will build up gradually, cash flows could be negative for a period after service commencement, implying a need for additional finance.

3.66. The choice and level of funding from available sources will depend in large part on the cost of borrowing and the profile of DCC's projected cash flows.

4. Conclusions and Next Steps

This chapter summarises the key proposals made in this document. It outlines the steps required to establish DCC and for it to procure the necessary services. It also outlines our proposed governance process for the development of the related provisions of the Smart Energy Code, and the changes to existing codes and instruments to ensure that DCC can start to undertake the scope of its activities effectively.

Summary of key proposals

4.1. We propose that the initial scope of DCC should be:

- Secure communications and access control: Providing a secure GB-wide communications network and ensuring that access to meter data is only available to properly designated parties;
- Translation services: Providing a centralised hub to ensure messages are translated into a consistent format and routed to all appropriate participants; and
- Scheduled data retrieval: Providing a service of scheduled data retrieval.

4.2. Our view is that meter registration should at some point form part of the DCC scope. However, this is a complex area, and one on which stakeholders are finely divided. Hence, the programme will seek further evidence to determine whether meter registration should be included in the initial DCC scope or at some later time.

4.3. Delivering of broader industry reforms are outside of the scope of the Smart Metering Implementation Programme and can be addressed through the normal industry processes. For example, we do not envisage that DCC will absorb settlement functions from the existing central bodies as part of the programme. However, we recognise the key role DCC could play in energy industry transformation and the potential to provide value-added services. Accordingly, consideration will need to be given to how evolution of its scope over time could be facilitated.

4.4. We believe that the delivery of data and communications services to support smart metering in the domestic sector is most effectively achieved by a single GB-wide entity. The programme considers that there should be a new licensed entity to provide procurement and contract management activities. The Authority would grant a new licence to the entity, following a competitive licence application process. DCC would in turn contract with and manage data and communications service providers to deliver the required services.

4.5. We do not propose to oblige suppliers in the non-domestic sector to use the services of DCC for meters with smart functionality. Instead we propose that suppliers may choose to use DCC if they wish to do so.

4.6. As part of the overall smart metering regulatory regime, we also propose to implement a Smart Energy Code, which will be a key instrument in regulating DCC's interfaces and relationships with the industry.

4.7. In order to bring forward the start of rollout and help deliver early benefits, we are proposing a staged approach to implementation under which suppliers will start to install smart meters that meet the minimum requirements defined in a common technical specification ahead of DCC being established. Between the point at which licence modifications mandating rollout targets are implemented and DCC service availability, suppliers would be responsible for procuring their own communications services.

4.8. From the date on which DCC starts provision of services, suppliers will be required to use these services for all WAN communications with smart meters in the domestic sector. This includes all meters installed prior to that time that comply with the relevant technical specifications. To provide certainty to suppliers and protect the interests of customers, specific arrangements may need to be put in place. For example, DCC could be required to take on communications contracts meeting certain pre-defined criteria. We are also considering earlier measures that may be necessary around interoperability in order to help ensure consumers will not face barriers in switching suppliers.

Next steps

4.9. Taking forward the development of the proposed initial scope of DCC outlined in Chapter 2 and DCC's realisation under the approach proposed in Chapter 3, will require work in four main areas:

- Further design work on the scope of DCC;
- The development of the DCC licence;
- The development of the competitive licence application process by which the DCC licence will be granted; and
- The development of the Smart Energy Code.

4.10. In the following sections, we briefly outline the work that will be required in each of these areas.

Scope of DCC's activities and industry change

4.11. We have worked closely with stakeholders to determine the optimal scope of DCC's activities and the implications for industry change, especially in the area of data management. This has identified that access control to smart meters can be implemented in different ways and that according to the approach adopted there may be implications for the way in which smart meter data can be accessed and delivered.

4.12. Analysis on a more complex scope for DCC, particularly with regard to the inclusion of meter registration, will require close work with stakeholders. This is because the economic justification requires the impact on industry and the costs and benefits of widening the scope of DCC to be considered simultaneously. It also requires a clear understanding of the timescale over which the scope might evolve and whether this changes the way in which the DCC initial services are delivered.

4.13. To address these issues we will work closely with stakeholders, including suppliers, network operators and existing central industry bodies. In particular, we will establish a Data and Communications Expert Group, made up of experts drawn from industry and other stakeholders. Along with responses to this consultation, the further analysis will inform final decisions on the optimal initial scope for the data and communications function.

Development of DCC licence

4.14. Development of the DCC licence needs to be undertaken in parallel with the development of the Smart Energy Code. There is a close relationship between the relevant provisions of each in some areas.

4.15. The programme will work closely with stakeholders in developing the Smart Energy Code. The programme will draft the DCC licence and will consult with stakeholders on the draft. Further detail regarding the development of the Smart Energy Code is set out in the "Regulatory and Commercial Framework" supporting document.

4.16. We will consult on the new licensable activity and the draft standard licence conditions. The licence and Smart Energy Code are currently expected to be finalised by spring 2012.

Appendices

Index

Appendix 1 – Consultation Response and Questions

1.1. We would like to hear the views of interested parties in relation to any of the issues set out in this document. When responding please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of an organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

1.2. We would especially welcome responses to the specific questions included in each chapter and that are replicated here. These detailed questions sit behind the more high-level questions contained in the Prospectus.

1.3. Responses should be received by **28 October 2010** and should be sent to:

- Margaret Coaster
- Smart Metering Team, Ofgem E-Serve
- 9 Millbank, London SW1P 3GE
- 020 7901 7000
- smartmetering@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them on the websites of Ofgem (www.ofgem.gov.uk) and DECC (www.decc.gov.uk). Respondents may request that their response is kept confidential.

1.5. Respondents who wish their responses to remain confidential should clearly mark the document(s) to that effect and include the reasons for confidentiality. Respondents are asked to put any confidential material in the appendices to their responses. It would be helpful if responses could be submitted both electronically and in hard copy.

1.6. Individual responses and information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004).

1.7. In view of this, it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department of Energy and Climate Change or Ofgem. We will process your personal data in accordance with the DPA. In the majority of circumstances, this will mean that your personal data will not be disclosed to third parties.

1.8. Any questions on this document should, in the first instance, be directed to:

- Margaret Coaster
- Smart Metering Team, Ofgem E-Serve
- 9 Millbank, London SW1P 3GE
- 020 7901 7000
- smartmetering@ofgem.gov.uk

1.9. You may make copies of this document without seeking permission. Further printed copies of the consultation document can be obtained from the contact above. An electronic version can be found on the Ofgem website at: www.ofgem.gov.uk. Other versions of the document in Braille, other languages or audio-cassette are available on request.

CHAPTER 2

Question 1: Do you agree that access control to secure centrally-coordinated communications, translation services and scheduled data retrieval are essential as part of the initial scope of DCC?

Question 2: Do you agree that meter registration should be included within DCC's scope and, if so, when?

Question 3: Should data processing, aggregation and storage be included in DCC's scope and, if so, when?

Question 4: Do any measures need to be put in place to facilitate rollout in the period before DCC service availability and the transition to provision of services by DCC, for example requiring DCC to take on communications contracts meeting certain pre-defined criteria?

CHAPTER 3

Question 5: Do you agree that the licensable activity for DCC should cover procurement and management of contracts for the provision of central services for the communication and management of smart metering data?

Question 6: Do you consider that DCC should be an independent company from energy suppliers and/or other users of its services and, if so, how should this be defined?

Question 7: Do you have any comments on the steps DCC would need to take to be in a position to provide its services and the likely timescales involved?

Question 8: Do you have any comments on the proposed approach to cost recovery and incentivisation for DCC?

Appendix 2 – Potential Data Volumes and Implications for the WAN

1.1. One of the challenges in considering the requirements for the WAN is the uncertainty around data volumes, in particular in a smart grid context and the need for further considerations of privacy issues. While the programme will not be selecting a particular technology it will be setting out the initial functional requirements and proposals for how these can best be "future proofed".

1.2. The "Statement of Design Requirements" supporting document gives an illustrative scenario in the region of 100 terabytes (one million megabytes) of data transfer across all GB households per year. This is equivalent to less than 100 kilobits of data transfer per household per day. This transfer volume is driven, initially, by a mix of consumption readings, diagnostic messages, firmware upgrade messages and regular downloads of electricity quality data for network operational planning purposes. These potential communications requirements are only indicative, as final requirements on data transfer and use will be subject to final decisions relating to data privacy and security issues.

1.3. To put the basic requirement for 100 kilobits of data transfer per household per day into context, a GPRS[3] connection operating at, say, 15 kilobits per second for data upload would handle this in the order of 10 seconds of active network data transfer.

1.4. Within the message transfer service set, firmware upgrades may present the most significant demand on the WAN in terms of data 'throughput'. The "Statement of Design Requirements" supporting document indicates that firmware upgrades may require in the order of 400 kilobytes of data to be transferred. The impact on the WAN will depend in part on whether the technology has a broadcast or multi-cast capability; meaning the ability to send the same data to all or many meter points simultaneously. If the technology does not have such a capability then it might still take only in the order of a few minutes in principle to download a firmware upgrade to an individual meter[4]. Area-wide firmware updates to a large number of meters within the same timeframe, however, would need to take account of the need for a large number of messages.

1.5. Mobile operators and other service providers may offer more sophisticated methods for such bulk software upgrades (e.g. using multi-cast or broadcast approaches). In any case, it may be possible to mitigate the need for full region-wide firmware upgrades to all meters by sending small command messages to 'roll back' to prior software versions, or to put the smart meter into a 'default' operating state depending on circumstances, with firmware upgrades being managed more generally with a phased approach.

[3] GPRS is used as an example as it is a prevalent technology in GB smart metering trials.
[4] 400 kilobytes is equivalent to 3200 kilobits. Taking GPRS technology as an example, GPRS is typically faster in download mode than upload mode; say 30 kilobits per second for download would imply in the region of 2 minutes for a 400 kilobytes firmware upgrade.

1.6. Integral to these arrangements will be the security of the throughput data. We will ensure that security and privacy protocols are developed in line with the ongoing security design work of the programme.

1.7. Potential smart grid requirements are likely to comprise two broad types of services over time:

- Smart grid operational planning: Regular downloads of electricity quality data for operational planning purposes.
- Smart grid 'near real-time' services: Supply status alarms and 'large scale, fast response' load management messages for electricity and gas appliances. These services are likely to require network responsiveness ('latency') in the order of minutes or seconds and for the WAN communications module to be 'awake' and ready to receive updates. It may be that, over time, faster responsiveness (lower 'latency') proves to be required, and justified by cost/benefit analysis, as part of future smart grid initiatives to make greater use of active demand side management. This requirement could be driven by increasing emphasis on system balancing in the presence of intermittent energy generation (e.g. from wind resources).

1.8. A requirement for 'large-scale fast response' messages is potentially demanding from a WAN perspective. As discussed in the "Statement of Design Requirements" supporting document, this requirement is considered an important and desirable capability, subject to confirmation of achievability and costs. This may initially require, for example for energisation status updates, messages to more than 1,000 premises within 15 minutes and to 100,000 premises within an hour[5]. The ability to move over time towards demand management of millions of meters is desirable and may become a requirement, depending on technology capability and cost effectiveness. Such messages could potentially be delivered using broadcast, multi-cast or multiple point-to-point connections and would require the WAN communications module to be 'always on' or 'always available' so that it is able to accept central messages without delay.

1.9. The above discussion indicates that the data volumes and data rates envisaged under the high case smart grids scenario are potentially consistent with the capabilities of a number of potential WAN technologies including cellular (for example, GPRS and more advanced 3G and 4G mobile data transfer technologies), PLC and a range of radio-based solutions.

1.10. The more demanding WAN requirements may derive from the need for 'near real-time' meter command messages, including 'large scale, fast response' load management messages. This requires rapid communications with a large number of meters in a short time and for the WAN communications module to be available and 'awake' to receive command messages promptly rather than just reporting in 'meter reads' on a scheduled basis. The capabilities and cost drivers for WAN technology options will need to be assessed with these requirements in mind.

[5] ENA Smart Metering System Use Cases, ENA-CR007-002-1.1, and page 84. This use case refers to energisation status messages.

1.11. This work will be progressed in two ways. Firstly, further dialogue with energy suppliers, distribution network operators and telecommunications service providers will help to inform the most appropriate level at which to pitch communications requirements in the WAN specification. Secondly, the procurement approach that DCC subsequently takes for its service providers is expected to address options for cost-effective communications scalability (i.e. meeting more demanding latency and demand-side management requirements) as well as adherence to initial operational requirements. For example, applicants for the DCC licence could be required to provide priced options for higher levels of communications performance. These options could subsequently be taken up in support of trials or full GB-wide deployments.

1.12. In terms of WAN technology costs the broad assumption is that the data communications requirement is relatively low in volume initially, and therefore WAN costs will be driven predominantly by the cost of establishing and managing WAN connections (though cost recovery mechanisms would still need to incentivise efficient use of the WAN resources). This assumption is on the basis that no demanding smart grid-related requirements, for example for demand-side management, materially impact the range of viable technology solutions and thus competitiveness of service provider offers to DCC.

Appendix 3 – DCC's Licence Principles

1.1. Tables A1 and A2 below provides an indication of some of the key principles that we would expect to take account of in developing the DCC licence. The key principles set out below are provided for illustrative purposes only and are not intended to represent an exhaustive list of the key principles which we may consider in developing the DCC licence.

Table A1 - Proposed principles to be included in standard licence conditions

1.	An obligation to provide such metering data to a licensee as is necessary for the licensee to comply with its regulated duties (subject to appropriate safeguards).
2.	An obligation to comply with a request by a licensee to offer terms for the provision of metering data.
3.	An obligation to maintain in the Smart Energy Code a charging methodology for the provision of DCC services that complies with the principles set out in the licence.
4.	An obligation to ensure that the rollout receives communication services as required.
5.	An obligation to run economic and efficient procurement processes for data management and communication services.
6.	An obligation to enter into service level agreements for data management and communications services.
7.	An obligation to ensure non-discriminatory treatment in procuring data management and communication services.
8.	An obligation to comply with specified data protection, data security and privacy provisions.
9.	An obligation to comply with the Smart Energy Code (and possibly MRA, SPAA, BSC, UNC depending on scope of activity)
10.	An obligation not to provide value-added services unless approved by the Authority.
11.	An obligation requiring the DCC to be independent from service providers unless otherwise approved by the Authority.
12.	Obligations relating to the extension or regranting of the licence, including an obligation to provide details of assets and liabilities to be transferred, intellectual property rights and an obligation to enter into a Sale and Purchase Agreement for any assets owned by the licensee prior to regranting.

13.	Obligations relating to financial matters, including financial ring fencing, maintaining an acceptable credit rating and the appointment of an administrator in the event of failure.
14.	Obligations relating to the provision of information to the Authority, including the provision of an annual report and a resource availability report.
15.	Obligations relating to general obligations and arrangements including no abuse of position, prohibition of discrimination, payments to the Authority, determinations by the Authority and licence modification/extension.

Table A3 - Principles to be included in special licence conditions

1.	Obligations relating to the revenue or price terms.
2.	Obligations relating to performance incentives.
3.	Obligations relating to efficient transfer value at the time of licence extension/retendering.
4.	Obligations relating to income adjusting events.

Appendix 4 – Glossary

A

Access control

The method used to ensure that access to meter data is only available to properly authorised parties.

Activation charge

A charge made by DCC for activating each WAN communications module. This would recover costs associated with bringing each WAN connection into service as well as an appropriate share of central communications costs and the administrative costs of connection set up.

C

Codes

Industry codes establish detailed rules that govern market operation, the terms for connection and access to energy networks. The supply and network licences require the establishment of a number of industry codes that underpin the gas and electricity markets. The electricity codes are: Balancing and Settlement Code (BSC), Connection and Use of System Code (CUSC), Distribution Code, Grid Code, Master Registration Agreement (MRA), System Operator-Transmission Owner Code (STC), Distribution Connection and Use of System Agreement (DCUSA). The gas codes are the Uniform Network Code (UNC), Independent Gas Transporter (IGT) Network Codes, Supply Point Administration Agreement (SPAA).

Commercial interoperability

The terms on which a new supplier can use the meter and related equipment when a customer changes supplier.

Communications hub

The device that houses communications equipment which enables communication of data between meters and the central data and communications function.

Communications service providers

Providers of the communications infrastructure that will carry data to and from smart meters in the domestic sector.

Consumer

Person or organisation using electricity or gas at a meter point.

Customer

Any person supplied or entitled to be supplied with electricity or gas by a supplier.

D

Data aggregation

Involves the aggregation of data from individual meters, and submission to ELEXON for settlement.

Data collector

A person qualified to retrieve, verify, process and validate meter reading data.

DataCommsCo (DCC)

New proposed entity which would be created and licensed to deliver central data and communications activities. DCC would be responsible for managing the procurement and contract management of data and communications services that will underpin the smart metering system.

Data processing

Involves the validation of meter reading data, and the transfer of the relevant information to interested parties.

Data retrieval

Obtaining a reading (either manually or remotely) from a meter.

Data service providers

Providers of any data service, including data retrieval, aggregation, processing and storage.

Demand-side management

Demand-side management (also known as load management) involves energy consumers managing demand in response to changes in the balance between supply and demand, usually in response to a price signal.

Department of Energy and Climate Change (DECC)

The Department of Energy and Climate Change (DECC) was created in October 2008, to bring together: energy policy and climate change mitigation policy.

Distribution Network Operators (DNOs)

DNOs take electricity off the high-voltage transmission system and distribute this over low-voltage networks to industrial complexes, offices and homes. DNOs must hold a licence and comply with all distribution licence conditions for networks which they own and operate within their own distribution services area. There are 14 DNOs covering discrete geographical regions of Britain.

E

Economies of scale

Where the average costs of producing a good or providing a service falls as output increases.

Electricity meter

A measuring instrument that records the quantity of electricity supplied.

ELEXON

ELEXON is the Balancing and Settlement Code Company (BSCCo) defined and created by the BSC. The BSC places obligations on ELEXON, who consequently manage the balancing and settlement arrangements, in conjunction with the BSC Panel. ELEXON therefore procures, manages and operates services and systems, which enable the balancing and imbalance settlement of the wholesale electricity market and retail competition in electricity supply.

Energy suppliers

A company licensed by Ofgem to sell energy to, and to bill, customers in Great Britain.

F

Feed-in-tariff (FIT)

A feed-in tariff is a policy mechanism which came into effect in April 2010. It is designed to encourage the adoption of renewable energy sources. FITs consist of two elements of payment, made to generators, and paid for by licensed electricity suppliers. The first element is a generation tariff that differs by technology type and scale, and is paid for every kilowatt hour (kWh) of electricity generated and metered by a generator. This generation tariff will be paid regardless of whether the electricity is used onsite or exported to the local electricity network. The second element is an export tariff which is either metered and paid as a guaranteed amount that generators are eligible for, or, in the case of very small generation, assumed to be a proportion of the generation in any period without the requirement of additional metering.

Functional requirements

The minimum functions that must be supported by the different elements of the smart metering system to ensure the delivery of the benefits of smart metering. Describes what the smart metering system must do (not how it must do so).

Gas and Electricity Markets Authority (GEMA)

The Authority is Ofgem's governing body. It consists of non-executive and executive members and a non-executive chair. The Authority determines strategy, sets policy priorities and takes decisions on a range of matters, including price controls and enforcement. The Authority's principal objective is to protect the interests of existing and future consumers in relation to gas conveyed through pipes and electricity conveyed by distribution or transmission systems. The interests of such consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of the supply of gas and electricity to them. The Authority's powers are provided for under the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998 and the Enterprise Act 2002.

Gas meter

A measuring instrument that records the volume of gas supplied.

Gas transporter (GT)

A company, licensed by Ofgem, which transports gas through its network on behalf of a gas shipper.

H

Home area network (HAN)

The smart metering HAN will be used for communication between smart meters, IHDs and other devices in consumers' premises.

I

In-home display (IHD)

An in-home display is an electronic device, linked to a smart meter, which provides information on a customer's energy consumption.

Interoperability

The ability of diverse systems, devices or organisations to work together (interoperate). See also commercial interoperability and technical interoperability.

L

Licence

Transporting, shipping and supplying gas; and generating, transmitting, distributing and supplying electricity are all licensable activities. Ofgem grants licences that permit parties to carry out these activities in the GB market. The licenses require the establishment of a number of multilateral industry codes that underpin the gas and electricity markets. Licensees need to be signed up as parties to codes in order to operate in the gas and electricity markets (see codes).

Licence application regulations

The regulations that will define the different steps in the competitive licence application process to grant the DCC licence.

M

Meter Asset Manager (MAM)

A person approved by the Authority as possessing sufficient expertise to provide gas meter-related services. A gas MAM essentially provides the services that would be provided by a Meter Asset Provider and Meter Operator in electricity.

Meter Asset Provider (MAP)

The party responsible for the ongoing provision of the meter installation at a meter point. In electricity the MAP is responsible for supplying electricity-metering equipment for the purpose of satisfying the electricity settlements process, the requirements of the relevant Use of System Agreement and the relevant primary and secondary legislation.

Meter Point Administration Service (MPAS)

Electricity DNOs are required by licence to provide a Meter Point Administration Service to provide information regarding electricity supply to properties in that DNOs area. Information provided by the service consists of: The name of the electricity company registered to supply a property and the dates that they have supplied from, Customer supply number, Supply numbers to change suppliers. Information can be given to customers, suppliers and agents acting on behalf of customers such as Consultants, with permission from the customer.

Meter reading or meter data services

A periodic reading of a meter. It involves two separate functions, namely data retrieval and data processing.

Microgeneration

Microgeneration is the on-site generation of lower-carbon heat and power by individuals, small businesses and communities at a small-scale.

N

Network operator

The companies that are licensed by Ofgem to maintain and manage the electricity and gas networks in GB.

O

Ofcom

The independent regulator and competition authority for the UK communications industries.

Ofgem

The Office of the Gas and Electricity Markets (Ofgem) is responsible for protecting gas and electricity consumers in Great Britain. We do this by promoting competition, wherever appropriate, and regulating the monopoly companies that run the gas and electricity networks.

Ofgem E-Serve

Ofgem E-Serve is responsible for Ofgem's support and delivery functions. It focuses on administering environmental programmes and the delivery of sustainability projects such as the Smart Metering Implementation Programme.

P

Privacy by design

A system that has been designed with privacy in mind from the outset.

Programme

The Smart Metering Implementation Programme.

S

Smart appliances

An appliance that can alter the way in which it uses energy (consumption level or time of use) in response to changes in the balance between supply and demand, usually in response to a price signal.

Smart Energy Code

The proposed new industry Code that will cover both gas and electricity and will contain the detailed regulatory, commercial and technical arrangements applicable to smart metering during rollout and on an enduring basis.

Smart grids

Smart grids, as part of an electricity power system, can intelligently integrate the actions of all users connected to it - generators, consumers and those that do both - in order to efficiently deliver sustainable, economic and secure electricity supplies.

Smart meter

In addition to traditional metering functionality (measuring and registering the amount of energy which passes through it), smart meters are capable of two-way communication allowing them to transmit meter reads and receive data remotely.

Smart metering regulatory regime

The regime which will provide the arrangements for the introduction and ongoing operation of smart metering. These regulatory arrangements will be introduced using powers under the Energy Act 2008 to amend existing licences and codes, and to create a new licensable activity and a new licence.

Supply Point Administration (SPA)

The management of the information relating to all gas supply points in Britain, domestic, industrial and commercial. This is carried out by Xoserve, and the information is used to facilitate the transfer processes which enable gas supply competition to operate effectively in the UK.

T

Technical interoperability

The capability of systems or devices to provide and receive services and information between each other, and to use these services and information exchange to operate effectively together in predictable ways without significant user intervention. Within the context of the smart metering system, this means the seamless, end-to-end connectivity of hardware and software from customer premises equipment through to DCC, suppliers, network operators and other authorised parties.

Technical specifications

The technical specifications for the smart metering system will be an explicit set of solutions and guidelines as to how the smart metering system will fulfil the functional requirements

v

Volume charges

A proposed charge levied by the DCC in relation to the volume of data transferred, which may be differentiated by time of day and, depending on the technology, a charge for the number of data transfers (e.g. the frequency of meter data access).

Value-added services

Services beyond the 'core services' necessary for the functioning of the smart metering system, which will be enabled by the smart metering infrastructure.

w

Wide area network (WAN)

The smart metering WAN will be used for two-way communication between smart meters and DCC (via the WAN communications module in the customer's premises).

x

Xoserve

Xoserve delivers transportation transactional services on behalf of all the major gas network transportation companies, and provides a consistent service point for the gas Shipper companies.

Appendix 5 – The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[6]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[7].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- the need to secure that all reasonable demands for electricity are met;
- the need to secure that licence holders are able to finance the activities which are the subject of obligations on them[8];
- the need to contribute to the achievement of sustainable development; and
- the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[9]

[6] Entitled "Gas Supply" and "Electricity Supply" respectively.
[7] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[8] Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[9] The Authority may have regard to other descriptions of consumers.

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- promote efficiency and economy on the part of those licensed[10] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and
- secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard to:

- the effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[11] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[10] Or persons authorised by exemptions to carry on any activity.
[11] Council Regulation (EC) 1/2003