



Smart Metering Implementation Programme

Prospectus Response – Part 2

28 October 2010

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1 Management summary

1.1 Introduction

As with our September 28th responses, BT welcomes the opportunity to comment on the Smart Metering Implementation Programme Prospectus, and looks forward to supporting the Government and other stakeholders in this key initiative. As one of Great Britain's largest providers of communications solutions and services, with millions of residential and business customers, BT's proven experience and leadership in delivering large critical national infrastructure projects within complex environments is highly relevant to this Programme.

1.2 Our collaboration with Arqiva and Detica

The successful implementation of smart meters and the smart grid in Great Britain is dependent on a robust and secure infrastructure providing reliable connectivity, data generation and management, and shared industry processes. This is a complex undertaking which will require a number of proven service providers to work together to design, build and operate a solution that will endure for the lifetime of the meters.

In July 2010, BT, Arqiva and Detica, a division of BAE Systems plc, announced a collaboration to offer a universal, dedicated, secure and resilient nationwide communications network to underpin the Government's plans for smart meters and subsequent smart grid applications. This group brings together significant expertise in delivery of nationwide communications systems as well as leading edge security solutions, and will be pleased to work with other partners as the smart metering requirements become clearer.

In October 2010 we announced that BT, Arqiva and Detica have branded the consortium "SmartReach" and made public its proposals to accelerate and de-risk the delivery of the Government Smart Meter mandate. Further details can be found at www.smartreach.com.

1.3 About this response

This document contains comments and recommendations relating to the Prospectus and associated documentation, including direct responses to the specific questions posed with an October return date and should be read alongside previous response.

1.4 Summary of our recommendations

BT considers the Prospectus to be a high quality set of documentation that has inspired discussion and raised many interesting points. We agree with many of the recommendations in the documents.

However, in addition to the points submitted as part of our response to meet the earlier 28th September deadline, there are a number of other areas where we believe additional thought is required:

Consumer Protection

To ensure consumer protection maintains its current rigour in the Smart world, it is important to identify all examples of reasons why engineers currently need to make physical visits to customers. These include, but are not limited to, verifying the identity and circumstances of the consumer.

Data Quality

We are mindful that many of the processes suggested will be heavily dependent on the DCC data quality and recommend that significant thought is given to the regulatory and incentives regime to ensure appropriate attention is given to this crucial factor in the success of the Programme.

Customer Service for In Home technology

The Prospectus rightly identifies some challenging questions on ownership of, and responsibility to support, technology in the home. We lay out some of the processes and handovers that will need to be accommodated which identify some of the practical complexity inherent in providing consumer service in a necessarily competitive multi supplier world. It remains our view that this complexity is significantly compounded if multiple technologies also need to be supported and recommend that, wherever possible, uniformity is sought.

Non Domestic Customers

While we are sympathetic to some of the reasons for considering not mandating the use of the DCC for Non Domestic customers, we have reservations. For example, we are concerned about some of the benefits that this may surrender, the additional costs that may be incurred, and the consequential additional complexity that may be detrimental to the customer experience. As a result, we wonder whether on balance the opt out is going to be in the best interests of customers or competition.

Water metering

We believe that in addition to Smart Grid applications, at some stage in the future Smart Metering infrastructure could also accommodate water metering and leak detection at modest incremental cost. This possibility should be borne in mind in reaching decisions on the current proposals.

2 Response to Prospectus and associated documents

2.1 Prospectus

Q1	<i>Do you have any comments on the proposed minimum functional requirements and arrangements for provision of the in-home display device?</i>
<i>(Response provided in September but copied here for completeness)</i>	
<p>The IHD has two purposes:</p> <ul style="list-style-type: none"> • To enable consumers to interact with some basic functionality of the meter (e.g. pre-payment top-up and gas or electricity reconnection acknowledgement). • To provide a display of information about a consumer's energy (and in the future water) usage. <p>The first of these will be required where consumers will not be able to easily access the meter itself, and as such should be included in the minimum functionality.</p> <p>The second is to support consumers in changing their energy usage behaviour by providing feedback to them. To this end there is a greater range of functionality that can be considered. However, this additional functionality will increase the cost of devices and there will, therefore, be a trade-off between the costs of providing devices by the suppliers against the level of engagement of consumers to deliver the behavioural change necessary.</p> <p>Although the research evidence into the use of IHDs by consumers is mixed, there is some evidence that most consumers use the display for the first few months allowing them to reduce their energy usage and make savings. However, in the long run, many consumers stop using their devices and simply consign them to the drawer. In the light of this rapid tail-off of usage of the IHD, we recommend that the IHD provided as part of the smart metering rollout should provide a very basic level of information display. The basic IHDs should have the following characteristics:</p> <ul style="list-style-type: none"> • The display needs to be portable if possible to allow for ease of locating in the home, so long battery life is important. • The display needs to be easy to read and easily configurable to the consumer's needs and wishes, e.g. no point in showing gas consumption if the consumer does not have gas. • The units that the consumer sees need to be easily changed to meet their needs, some will understand Kwh but others may wish to see pence per minute/hour/day etc. • Careful consideration needs to be given to how much information is displayed and how it is displayed to ensure its intelligibility. It is recommended that the Programme issue guidelines on this to ensure a minimum standard is provided on the "free" IHDs. <p>However, smart meters should also provide open, secure interfaces to their data to allow a market in after-market IHDs and other devices (e.g. TV Set-Top boxes) that would let consumers who are dissatisfied with the base level of information provided, but remain motivated to make behavioural change, to "upgrade" their IHD. These external devices may also be able to use additional information from the Internet via a broadband connection to enhance the display. The types of additional functionality that the aftermarket devices might provide include:</p> <ul style="list-style-type: none"> • Selection of a usage profile such that consumers can compare their profile day to day. 	

- Highlighting periods of cheaper electricity tariff. A traffic light system or use of different colours to enable ease of notification to consumers may be effective.
- The presentation of carbon emissions could also be provided for more ecologically conscious consumers. However, it is acknowledged that the calculation of this information is far from straightforward.

In conclusion the free IHD, which might have a short life, needs to be of low cost to maximise the initial benefits. The consumer can then decide how and with what device they will engage for their on-going energy management. The open standard interface will ensure that there can be a number of providers who can compete in this space.

Q2	<i>Do you have any comments on our overall approach to data privacy?</i>
<i>(Response provided in September but copied here for completeness)</i>	
<p><i>"The customer shall choose in which way consumption data shall be used and by whom, with the exception of data required to fulfil regulatory duties".</i></p> <p>We believe in principle that this is a positive step and will go some way in alleviating consumer concerns over data privacy. However, we also believe that there are a number of key points that would need further and careful consideration around data privacy:</p> <ul style="list-style-type: none"> • Privacy by Design: Data protection must be embedded within the core design of the system, should be introduced early and needs to be in place for the mandated rollout. In practice, therefore, this protection needs to be in place prior to the DCC in order to prevent experiences such as those which occurred in the Netherlands, which gave rise to concerns over privacy that led to its smart metering bill being initially rejected. • Consumer Consent: Whilst we are in agreement that consumer consent for the collection, use and disclosure of meter data should be implemented, we believe that further consideration needs to be given to the requirements of customers who may not be in a position to make informed decisions around what they are consenting to, and the level of consent that they have provided. Enforcement of consumer consent is also a cause for concern as the Data Protection Act, though holistic for personal data protection, may not be granular enough to cover specific meter data privacy. Further, serious consideration needs to be given to how such consent management will be achieved where individuals are not 'digitally enabled' in an environment where meter & meter display functionality will be limited. We note that in the context of the Third Package Consultation by DECC (Consultation on the Implementation of the EU Third Internal Energy Package URN 10D/727 July 2010) that s105 of the Utilities Act as also considered relevant in relation to industry confidentiality requirements and would suggest that the effect of that section is also considered in the context of the development of the approach on data privacy. • Data Storage: Mastering of data within the meters for a period of 12 months in theory provides greater control and ownership to the customers, however it also raises questions around data access and resilience: <ul style="list-style-type: none"> ○ A number of industry bodies require access to this data, not least the suppliers who would require regular and ad hoc access to data, albeit aggregated in order to make key customer and tariff management decisions ○ Mastering data only within the meters will create a technological as well as process impracticability ○ Singular data storage with no immediate back-up strategy will create 	

resilience issues where meter data is lost by consumers (either wilfully or inadvertently).

The Programme should therefore give consideration to the possibility of a centralised data store, perhaps within the DCC. We would envisage the DCC working alongside the Information Commissioner's Office (ICO) to create specific meter data protection standards which might be included as part of the DCC license.

- Data Integrity & Confidentiality: Storage of large amounts of data locally within the meters also introduces security concerns:
 - The ability to hack into, or interrogate meters, would allow for tampering or misrepresentation of meter data thus causing data integrity issues.

There is a further concern around sharing of meter data, for example through rental turn-over or change of ownership of property. A change in tenancy status would mean new occupiers having access to meter data from previous incumbents. This could also cause a problem if residences change from domestic to non-domestic status, as this then raises questions over ownership of the data. Clearing down or sanitising this data without any other form of storage or data source would again cause loss of data, especially if the customer wishes their data to move with them.

Q3	<i>Do you have any comments on the proposed approach to ensuring customers have a positive experience of the smart meter rollout (including the required code of practice on installation and preventing unwelcome sales activity and upfront charging)?</i>
Addressed in September response.	

Q4	<i>Have we identified the full range of consumer protection issues related to remote disconnection and switching to prepayment?</i>
<p>The measures in the Prospectus provide a good degree of protection to consumers. However, the introduction of smart metering and the ability to activate prepayment mode remotely or disconnect changes the current business processes that the existing protections support and therefore careful consideration should be given to introducing some additional protections in the new process.</p> <p>The current process typically requires a visit to the premises by an engineer to install a prepayment meter. This provides two protections. First, the meter installer ensures that the meter is accessible to the customer for topping up the meter. This access would be needed in the event that pre-payment top-ups are required if the WAN and the IHD are not available depending upon the final requirements for methods of pre-payment top-up. This protects consumers against being switched to prepayment without understanding the practical consequences of a change of their meter location. Second, the identity of the premises and the customer are validated along with their desire to switch to prepayment. This protects customers against the possibility of being inadvertently switched to prepayment or disconnected due to data errors in supplier systems.</p> <p>Therefore, consideration should be given to the following potential additional protections:</p> <ul style="list-style-type: none">• initial meter installations should include an assessment of the suitability of the installed location for prepayment. This assessment will need to take into account the new top-up methods that smart metering will enable (e.g. remote top-up after a retail purchase). This assessment might be conditional to account for specific customer needs (e.g. not suitable for elderly or infirm customers);• the switching of a customer to prepayment could require the customer to authorise the switch on the meter or the IHD to ensure that the correct address and customer	

has been switched. This might be an interim mechanism until the quality of data held by suppliers and the DCC can be proven;

- definition of a code of practice for ensuring and validating the quality of data held for disconnection and switching purposes;
- definition of guidelines surrounding how suppliers interact with customers to notify them of switching or disconnection remotely which should be reviewed to ensure that they can effectively and fairly deal with vulnerable groups or those who do not have a good understanding of English;
- opportunity to have an opt-in for use of data: this consent must be informed, specific and case-by-case to comply with data protection legislation; the installation visit may be a suitable opportunity to obtain informed and specific consent;
- a fast-track mechanism to support appeals against disconnection to quickly correct where a person has been incorrectly disconnected.

Q5 *Do you have any comments on the proposed approach to smaller non-domestic consumers (in particular on exceptions and access to data)?*

Whilst many of the proposals surrounding non-domestic customers are good, some of the proposed exceptions are of great concern. In general, exceptions are undesirable, as they will reduce the level of benefits delivered by smart metering and disrupt the economics necessary to ensure an efficient and competitively-priced offering. Therefore, they should only exist where the cost of delivering smart metering exceeds the benefits expected or there is an unacceptable risk associated with deploying smart metering technology and processes. We would support the application of Data Protection Act principles to the data of small non-domestic customers, and are also mindful that the Utilities Act s105 provisions could apply to such data and so require compliance with the restrictions set out there.

When considering the benefits, consideration needs to be broader than the costs and benefits associated with a single instance. For example, a large number of exceptions may require suppliers and DNOs to operate parallel systems thus increasing their costs. Similarly, coverage which is not approaching universal may limit the ability of stakeholders to realise the benefits associated with load management.

Therefore, the exception surrounding coverage needs to be refined to ensure that it is only applied in extreme circumstances where connection is genuinely cost prohibitive. For example, a cost threshold could be inserted into the exception based on the price of providing the DCC-based service to (say) 99% of the population.

We are also concerned about the exception on the grounds of supply interruption being risky or expensive. Given that supply can currently be interrupted for a variety of reasons (e.g. a fault at the substation, cable breakage due to ground works), it seems unwise to suggest in policy that the risk of supply interruption is too great to consider. If the consequences of supply interruption are excessively risky or costly, we suggest that the customers need to implement mitigation measures independent of the smart metering programme, as smart metering will not materially increase the risk of loss of supply.

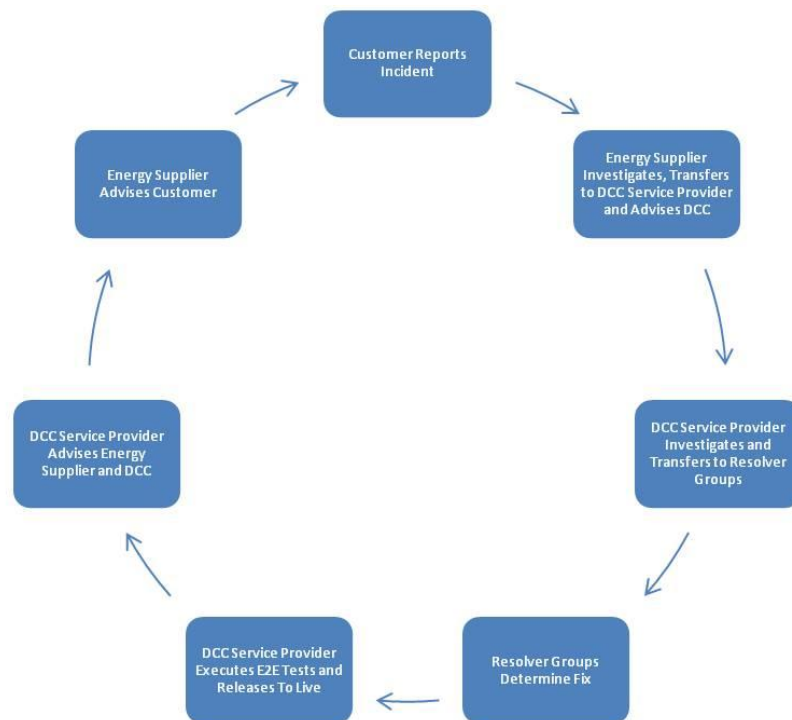
Q6 *Do you have any comments on the functional requirements for the smart metering system we have set out in the Functional Requirements Catalogue?*

Addressed in September response.

Q7 *Do you see any issues with the proposed approach to developing technical specifications for the smart metering system?*

Addressed in September response.

Q8	<i>Do you have any comments on the proposals that energy suppliers should be responsible for purchasing, installing and, where appropriate, maintaining all customer premises equipment?</i>
<p>We agree with the proposals for energy suppliers to purchase, install and where appropriate maintain the Customer Premises Equipment (CPE). As the energy suppliers (or their agents) are undertaking the physical installation of the CPE (i.e. meter, communications module and IHD), then the energy supplier will be responsible to the consumer for the end-to-end service. At this stage we believe the service model to look as follows:</p> <ul style="list-style-type: none">• Consumers reporting incidents with their smart metering service will contact their energy supplier (via the appropriate service channel made available by the energy supplier). Consumers will not directly contact DCC service providers;• Incidents will be reported to the DCC service provider by the energy suppliers (for smart metering) and the DNOs (for smart grid). They may also report incidents to DCC's Helpdesk, which will have at least a top-level view of the DCC service (i.e. not necessarily at the level of detail available to the service providers);• Incidents may also be reported to the DCC service provider by DCC's Helpdesk;• The DCC service provider's service desk will undertake initial technical investigation to determine the potential cause and to gather further information;• The DCC service provider's service desk will transfer the incident and diagnostic information to the respective resolver group;• The resolver group will determine and implement fixes as required;• The DCC service provider's service desk will manage the incident resolution activities and reporting to the DCC and to the energy suppliers or DNOs;• The DCC service provider's service desk will undertake service tests of the fix and close the incident with the energy supplier or DNO as appropriate;• The DCC service provider will undertake regular proactive service monitoring and testing activities;• The DCC service provider will undertake service management (including billing) and housekeeping activities.	



We observe the following:

- A multicomunications environment, containing many differing HAN and WAN technologies, will create significant training commitments or logistical challenges when installing and maintaining these different solutions. The questions in the prospectus appear to promote a multicomunications environment, which will add complexity and hence cost to the solution. Ofgem should firstly recommend the adoption of a single communication solution, which meets the requirements of the HAN and WAN elements of the metering system.
- It is unclear what happens after the first year post installation, will there be an enduring requirement on suppliers to warrant the IHD?
- There doesn't appear to be clear ownership of End to End (E2E) connectivity;
- We foresee some complexity over maintenance, especially in the case of HAN connectivity issues, i.e. which supplier and MOP would respond for a breakdown of communications to the gas meter or water meter, especially if the only solution is either to move the communications hub module or the meter.
- There will be problems with IHDs on two step installations, where customers receive both fuels from different suppliers who do not coordinate installation. We see issues surrounding connectivity of the IHD.
- On change of supply should the new supplier take over responsibility for the IHD on commencement of service? Or should the supplier send the customer a new IHD? What happens on the change of supply if the customer takes both fuels, but decides to change just one of its suppliers and the IHD fails to connect? The complexity introduced by the proposed model in the prospectus could risk customer dissatisfaction. Therefore, we recommend that a use-case analysis of

installation and maintenance practices be undertaken.

- The model proposed in the prospectus may also drive the industry to promote only a dual fuel offering, and this will restrict consumer choice and potentially threaten the entry of lower cost more sustainable single suppliers entering the market.
- With regard to the issue of ownership and insurance of the meter, it is assumed that, as current practice, the responsibility for installation and maintenance lies with energy companies and / or equivalent bodies.

Q9	<i>Do you have any comments on the proposal that the scope of activities of the central data and communications function should be limited initially to those functions that are essential for the effective transfer of smart metering data, such as data access and scheduled data retrieval?</i>
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(Response provided in September but copied here for completeness)

We broadly agree with the proposal, subject to more detailed impact analysis. Essential functions of the DCC should also cover the points below.

The DCC should be responsible for any process changes needed for operation of smart metering communications plus managing any message/data standardisation activities that are required. The DCC should have a governance/community management role – for example in the management of ongoing technical and user groups looking at future enhancements to the DCC (for instance smart grid) and increased scope.

However, before the scope of the DCC is finalised, detailed impact assessments are needed of the pros and cons of central (DCC) versus federated (energy suppliers, DNOs, meter operators etc) data management. The Prospectus recommends that DCC is initially a data carrier. However an entity will need to define how that data is used across all industry parties to ensure that there is consistency in industry processes, e.g. meter registration, and that consumer data is being handled consistently and safely. Once defined, the industry bodies will then need to develop systems and standards for generating, collecting, aggregating, processing and storing the data, with an overall checking/gatekeeper role. The question is whether this federated approach is more cost effective, quicker to implement and carries less risk than a centralised approach (managed by the DCC). This impact assessment is needed now, to ensure that either the appropriate supplier licence changes are made or that planning of the centralised role is undertaken for the DCC Licence and Smart Energy Code. If such functions are included within the DCC at a later date (say 2 to 3 years after commencement), then there may be significant transition costs for suppliers and poor investment return. Business continuity and security are needed throughout, which will again add to the cost and complexity of interim solutions.

We agree that the DCC's focus should initially be energy (i.e. not serve other sectors) and that settlement should not be included - the question is the extent to which meter registration, data aggregation/processing/storage are best done in the DCC and when. Experience says not on day one, but after a period of market/service stability - say 5 years for all data services, with meter registration being introduced within 12 to 18 months. There is no point in changing existing and effective operating functions, such as Elexon, ElectraLink and xoserve.

Finally we agree with the design and accreditation roles of the DCC, but suggest that the help desk and security monitoring roles should be undertaken by the service providers with the DCC having capability to review and direct in escalation situations.

We believe that the scope of the DCC and the services it procures should remain dedicated to the needs of the energy sector. If the scope were widened it becomes

extremely difficult to predict usage patterns and applications which introduces data privacy, security and performance risk. Furthermore, we believe it is undesirable for such critical national infrastructure to be subjected to alternative commercial imperatives which may jeopardise the delivery of its energy related remit.

Q10	<i>Do you have any comments on the proposal to establish DCC as a procurement and contract management entity that will procure communications and data services competitively?</i>
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(Response provided in September but copied here for completeness)

We support the principle of there being a separate and independent procurement and contract management entity. We believe that this is appropriate given the importance of competition, energy industry focus and licensing, and follows tried and trusted practices.

However the responsibilities of the contract management entity and the service providers need to be clearly defined and then adhered to, to ensure that risk is carried by the best equipped parties. For example, the contract management entity should define outcomes (i.e. benefits) and outputs (i.e. SLAs) and not take on responsibility for design, integration or service operation. Equally, the contract management entity should not procure services in such a fragmented way that end to end SLAs and delivery responsibilities are compromised – for example by procuring hosting services separate to communication services. End-to-end integration and service operation of complex critical national programmes must be placed with service providers who have demonstrable experience and expertise in successful delivery. This is certainly true for the initial creation of the DCC's communication services; once these are operational and matured then re-procurement of component parts may be possible providing that in so doing it does not compromise the initial return on investment for buyers (energy suppliers) and service providers alike.

Our view is that communications and data services could, in theory, be procured separately, though we strongly believe that the synergies in infrastructure and management mean that both services could be delivered most cost effectively by a single service provider (most likely as a prime with sub-contractors or as a consortium). Equally, the service providers should respect the assurance, stakeholder management and futures roles of the contract management entity and not endeavour to engage with industry parties to serve their own business purposes.

Ofgem is rightly focused on the need for the DCC to enhance the competitive landscape by procuring the best solutions in open competition. The DCC and associated Licences and Codes should rightly be held accountable for ensuring the competitiveness of the energy industry. However we urge Ofgem not to assume that all elements of competitive communications must necessarily be available from several different parties. We strongly recommend that Ofgem works closely with Ofcom to address (if necessary through Telecommunications regulation) any issues that may arise once the optimum communications solution for smart metering has been specified. After all, in the final analysis competition is sought to ensure enduring value for money of the most suitable solution: it would be counterproductive to select a less suitable suite of solutions (with added complexity and cost) simply because multiple suppliers made it seem more competitive.

Q11	<i>Do you have any comments on the proposed approach for establishing DCC (through a licence awarded through a competitive licence application process with DCC then subject also to the new Smart Energy Code)?</i>
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(Response provided in September but copied here for completeness)

We agree with this approach. A competitive approach should be used to select the right

entity to take the role, offering value for money and expertise. The need for clear auditable terms of reference and openness in its dealings is essential, delivered through the licence and code. We recognise the challenges, however, in selecting a party to fulfil this role who has demonstrable expertise in managing complex national contracts, is experienced in the energy industry and is independent of all suppliers and service providers. It may be that all these characteristics are unavailable, and that the selection of the party for the DCC needs to concentrate first and foremost on industry knowledge and buy in contract or consultancy resources to provide the experience of critical national programme contract management. In addition, the Electronic Communications Code should be taken into account in the establishment of the DCC, particularly with respect to access.

Q12 *Does the proposal that suppliers of smaller non-domestic customers should not be obliged to use DCC services but may elect to use them cause any substantive problems?*

We understand the reasoning that has led to the proposal that the use of the DCC should be optional for non-domestic participants in the sector. We believe that this decision has a number of implications that should be considered when investigating how these can be overcome. These include:

- other industry players may be interested in the data (e.g. DNOs for load planning purposes) and the DCC provides a hub through which data can be routed (and anonymised if required);
- alternative solutions should adhere to the same level of end-to-end security as the DCC;
- the DCC will be required to provide universal, national communications coverage and to obtain the lowest unit cost per premise – this is best supported by all smart metering traffic being placed over the DCC WAN.

We also believe that further investigation should be undertaken into the basis of the competition in the current market. If this competition is not primarily on the basis of the WAN technology and the market participants are not primarily communications companies (e.g. Mobile Network Operators), then a possible alternative to a full opt out would be to mandate the use of the WAN elements of the DCC. This could enable the same end-to-end security as the domestic sector to be implemented and allow for multiple routing of data if required. We recognise that there would need to be a migration path to this model that minimises asset stranding and allows existing market participants to migrate onto the DCC communications at natural break points in their development cycles to minimise additional investment cost. Such an arrangement may effectively result in an artificial partitioning of markets which would otherwise be identical or at least closely linked; such partitioning may lessen the intensity or scope of competition in each market as well as reducing or prohibiting the realisation of efficiencies of scale and scope that would otherwise be available.

We recognise that, in this model, the services that the DCC provides to the non-domestic model would need to be offered under fair, transparent and non discriminatory terms and conditions - to ensure a level playing field. Developments of the service also need a fair competitive environment to ensure that changes to the services are delivered in line with industry requirements and do not unfairly favour any market participants.

Q13 *Do you agree with the proposal for a Smart Energy Code to govern the operation of smart metering?*

(Response provided in September but copied here for completeness)

Yes. Smart metering is a new service, critical to the country, the industry and most

importantly consumers. A dedicated code is needed, embracing smart metering together with other key elements of effective energy management (in particular smart grid). In the interests of timescales, we suggest that the code initially focuses on smart metering and grid applications (to enable early establishment of the DCC) and, if feasible, is extended to smart homes and communities as soon afterwards as practicable.

Q14 *Have we identified all the wider impacts of smart metering on the energy sector?*

We agree that overall the prospectus includes the wider impacts of smart metering on the energy sector. Elsewhere in our response, we have put forward proposals for the earlier and parallel procurement of the central communication provider and for WAN communications direct to the meter.

The Regulatory and Commercial framework outlined identifies the licences, codes and incentives required to rollout and operate smart metering. Responsibility for the rollout of smart metering is shared by the energy suppliers and the DCC, with the installation of meters governed by the energy supplier's regulatory regime and the rollout of data and communication services governed by the DCC regulatory regime. If there is a delay in the rollout by the energy suppliers there will be a significant impact on the revenues and costs of the DCC. In addition to incentives for meeting the rollout timetable, we recommend the introduction of a compensation charge mechanism into the energy supplier licence codes and obligations in the event of a delay by an energy supplier, with a mechanism for this compensation to be paid to the DCC.

The Smart Energy Code will be a crucial document, and its precise scope will be important. The cross-industry nature of that code will require some innovative provisions in relation to legislative obligations on the licensee, and in the licence obligations for its development and amendment. Depending on how those provisions are framed, the Code administrator could have the obligation for oversight of operation of the code and responsibility for amendments. Elements of the model for the Balancing and Settlement Code could be useful precedents in this area.

From our own evidence of WAN trialling and discussions, there is considerably more interest for smart metering from the water utilities than is generally recognised. By including water metering during the accelerated rollout of the DCC WAN, the cost of addressing the energy sector could be partially offset through economies of scale.

We understand that there is some consideration to soften the catalogue requirements as a way of accelerating early rollout, however the wider impact of this would be to design in the cost of refresh from the outset. We recommend a more cost effective solution would be earlier procurement of the strategic smart metering solution that addresses the wider catalogue.

Q15 *Is there anything further we need to be doing in terms of our ensuring the security of the smart metering system?*

(Response provided in September but copied here for completeness)

The creation and storage of such extensive data on household energy consumption patterns will generate a plethora of data security challenges. Aside from providing many benefits to the industry, the introduction of a shared communications and data infrastructure offers the potential and threats which will continue to evolve over time.

A comprehensive risk assessment, which identifies potential risks and analyses their likelihood and impact, and that represents a 'consensus view', is therefore needed. This can then be used to specify a set of controls that balances the level of assurance provided with the costs of implementing them. A set of security standards must then be published, alongside a governance framework, so that energy suppliers and potential service

providers can plan accordingly.

The introduction of new functionality to meters such as remote disconnect and the ability to remotely switch between pre-payment and credit, as well as the potential for smart grid functionality, increases the potential impact of security breaches, whilst the accessibility of the communications network increases the likelihood of attempted attacks.

The potential risks vary in their level but in many cases can be severe. A collective understanding of these risks needs to be agreed across all of the stakeholders to the Programme and published. This can then be used to design effective countermeasures.

A governance body is needed which will continuously review the risk landscape, the security strategy and therefore the standards to be adopted – this could be the DCC. Alongside this there is a need for a shared security operations service to manage access control, encryption and key management as well as intrusion detection and response. Managing these functions piecemeal would be expensive and ineffective. Furthermore, there may well be extreme circumstances under which 'crisis' decision making is needed. Whilst this may well then be 'executed' by the shared security operations service, it will be for the governance body, under HM Government's overall direction, to take the necessary decision (if necessary in ultimate 'arbitration' mode).

The staged approach to implementation has the potential to materially increase the overall risk profile if not managed efficiently, and also places a greater onus for mitigating these risks on the energy suppliers. These suppliers are likely to be ill-equipped to manage this very specialist function. The cost of establishing it, to an acceptable level of assurance, as an interim solution would be high.

A centralised security architecture, governed by a set of smart metering and smart grid security principles, must therefore be introduced early enough to protect industry investment of early rollout and rollout post DCC. These principles should focus on "Security by Design", "Defence in Depth" and a "Least Access" policy within the HAN, communication structure(s) and the DCC, aiming to protect the end-to-end infrastructure to acceptable levels. A detailed and holistic risk analysis should be undertaken covering the integration of all the components of the service. This risk analysis should be shared and agreed upon to help the industry specify the controls that will collectively manage known and anticipated threats.

The creation of the Privacy and Security Advisory Group (PSAG) is a positive step, but must in addition include cross-representation from the industry to ensure timely and relevant input and expertise. To have access to expert knowledge and thus to be effective, it is likely that otherwise 'vested interests' will need to be included within the PSAG.

A governance framework should be implemented as an overarching authority to manage the end-to-end Programme architecture, implementation and enforcement of security standards in line with what is expected of an addition to Britain's Critical National Infrastructure.

Q16	<i>Do you have any comments on the proposals for requiring suppliers to deliver the rollout of smart meters (including the use of targets and potential future obligations on local coordination)?</i>
Addressed in September response.	
Q17	<i>Do you have any comments on our implementation strategy? In particular, do you have any comments on the staged approach, with rollout starting before DCC services are available?</i>
Addressed in September response.	

Q18	<i>Do you have any other suggestions on how the rollout could be brought forward? If so, do you have any evidence on how such measures would impact on the time, cost and risk associated with the programme?</i>
Addressed in September response.	
Q19	<i>The proposed timeline set out for agreement of the technical specifications is very dependent on industry expertise. Do you think that the technical specifications can be agreed more quickly than the plan currently assumes and, if so, how?</i>
Addressed in September response.	
Q20	<i>Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?</i>
Addressed in September response.	

2.2 Communications Business Model

Q1	<i>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?</i>
(Response provided in September but copied here for completeness)	
<p>Yes. A centralised access control layer should be mandatory to ensure the security of the communications and data infrastructure. This access control needs to be bi-directional to ensure that the industry has specific and role-based access to meter data whilst assuring that scheduled reads, alarms, configuration and firmware updates, as well as real-time messages, are provided only to the correct, validated and authenticated end-points. Access control must adopt the principle of "Defence in Depth" and include basic controls like gateways, firewalls and intruder management, as well as identification, authentication, authorisation and encryption.</p> <p>It is important to note that access control is not only seen as applicable to the DCC operations, but should be managed by the DCC as an all encompassing framework and should thus cover all internal and external access to any part of the end-to-end system.</p> <p>Suppliers or potential suppliers will need access to meter data to allow them to provide the most competitive tariff to their current or target consumers. This will require informed consent but must also include accountable access control to ensure that only valid and authenticated bodies have access to the data. Technologically this will prove challenging, with no centralised access control and meter data mastered only within the meters. The Programme should seriously consider including services such as registration and change of supplier as centralised functions, presumably as part of a DCC functionality set, from the outset to enable adequate protection.</p> <p>The inclusion of remote disconnect functionality is a very positive step for the industry, however it also raises serious security concerns. A centralised access control service with enough supporting reference data within the DCC should provide the requisite control and protection necessary to ensure that consumers are protected from wilful or inadvertent threat of or actual disconnection.</p>	

Delivering this robust access control within the limited, short term technology and security architecture that is likely to be implemented during the interim period under the staged approach, will be challenging for the energy suppliers, especially when these solutions then need to be subsequently migrated to a central DCC service. This issue needs to be seriously considered, prior to a mandated roll out, to ensure consumer protection.

Q2 *Do you agree that meter registration should be included within DCC's scope and, if so, when?*

(Response provided in September but copied here for completeness)

The meter registration process has a tight coupling with communications connectivity and establishing security credentials (via access control mechanisms), hence the processes need to be streamlined and integrated very carefully. If, initially, the DCC does not have responsibility for coordinating the registration process over the Data Transfer Network but this remains with multiple parties (meter operators and suppliers), then end-to-end service integration will be much more complex and will require appropriate testing time before commencement of operation. The interim arrangements that will exist pre-DCC would need to continue, with transition to the DCC as soon as practicable (subject to planning, suggest this would be within the first 12 to 18 months of operation of the DCC). In respect of the legacy data point in the Prospectus, a programme of work should be put in place to resolve this before either interim or DCC arrangements take effect - if not, then there is the risk that this will actually worsen during the interim period before transfer to DCC.

Q3 *Should data processing, aggregation and storage be included in DCC's scope and, if so, when?*

(Response provided in September but copied here for completeness)

We agree that the data processing, aggregation and storage should be added to the DCC's scope, but over time once the core communications functions have been established. As outlined in our response to Prospectus Q9, we believe that a more detailed assessment should be undertaken of the costs and risks associated with maintaining these functions across multiple parties as opposed to centrally within the DCC. Subject to this assessment we would recommend that they are brought in to the DCC within 2 to 3 years of commencement of its operations.

Q4 *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?*

(Response provided in September but copied here for completeness)

Please refer to our response to Prospectus Q17 commenting on the earlier establishment of the DCC. The novation of potentially many contracts across energy suppliers could be challenging for the DCC. Rather the energy suppliers should develop Transition Plans in collaboration with the DCC and should take the responsibility for executing the transition arrangements to the DCC. To simplify transition, it would be helpful if the pre-DCC communications contracts were structured such that there were common service level agreements (and open interfaces) supported by broadly equivalent terms and conditions – a means of achieving these would be to include their definition within the modified supplier licences, following consultation.

We agree with rollout targets for energy suppliers, but recommend that risk/reward elements are built in against key indicators, such as over-delivery and increased consumer satisfaction, and we believe that the key remit of these early roll outs should be to identify and implement process and systems changes required. We recommend that the volume of

early installs is managed carefully to ensure that logistic and economic difficulties are not introduced by potentially having a large number of stranded meters before their specifications are baselined.

Q5 *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?*

(Response provided in September but copied here for completeness)

The licence should definitely cover secure communications on a GB-wide basis. It should also be extended to include data services when the associated consultations have been completed and decisions have been made as to the extent to which these are brought into the DCC. We do believe that, initially, the DCC should be focused on communication services, with meter registration following within 12 to 18 months of service commencement. Other data services should then be added – please refer to our response to Prospectus Q9 for discussion of the pros and cons of a federated versus centralised data management approach.

Q6 *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?*

(Response provided in September but copied here for completeness)

Yes, the DCC should be independent and Not-For-Profit. It needs to manage service providers impartially and for the interests of consumers and energy stakeholders. Its impartiality is enshrined in the Licence. Fundamentally the DCC should be responsible for outcomes within its scope (e.g. service charges) and service levels (e.g. availability of service, data transfer performance).

Q7 *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?*

(Response provided in September but copied here for completeness)

In addition to establishing DCC's licence and the Smart Energy Code, the key steps that the DCC would need to take to be in a position to provide its services are:

- implement governance and control arrangements with users of its services
- define processes for collection and transfer of data to required industry parties
- prepare output specifications for procurement of communications service providers (please see earlier responses in which we recommend that establishing the DCC and its service providers should be brought forwards)
- oversee the build, test and acceptance of communications solutions (including standards compliance)
- plan service introduction and transition (from pre-DCC services)
- integrate DCC communications services with industry users (including transfer of specific data items to specific service user systems)
- hold model trials with service users (covering functional and non-functional tests) prior to any transition or commissioning activities
- manage the transition (technical and commercial) to DCC communications services
- execute communications to all users and stakeholders.

We suggest that the 6 month period suggested in the Prospectus for the above activities is too short for a critical national programme of this size and complexity. We believe that a 12 month timescale is still very challenging but more achievable. As we commented in our response to Prospectus Q17, an alternative approach is to procure the service providers and commence implementation activities in parallel with establishing the DCC. This

approach, successfully applied in the electricity deregulation of the 1990s, would enable all the above steps to be initiated earlier than the timescales recommended in the Prospectus and would therefore reduce delivery risks and transitional complexities (compared with having numerous communications contracts that would need to be novated).

Q8	<i>Do you have any comments on the proposed approach to cost recovery and incentivisation for DCC?</i>
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(Response provided in September but copied here for completeness)

For smart metering we suggest that the DCC charges are met by the energy suppliers (in the four categories of activation, standing, volume and general). As the network operators gain benefit from the smart meters (i.e. more accurate and frequent network end point readings) then the energy suppliers should be permitted to discount the charges they pay to the network operators accordingly (based on activation, standing and volume). When smart grid is added the charging regime should change with network operators also being charged directly by the DCC (based on the four categories) to reflect the benefits the network operators will leverage through demand side management and associated SLAs delivered by the DCC. We also recommend that incentives are needed for over-achievement of SLAs and effective management of risks. The DCC should work to a published service rate card with transparency of its operating margin.

2.3 Consumer protection

Q1	<i>Do you have any views on our proposed approach for addressing potential tariff confusion? What specific steps can be taken to safeguard the consumer from tariff confusion while maintaining the benefit of tariff choices?</i>
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We have no comment to make on this question.

Q2	<i>Do you agree with our proposed approach for addressing unwelcome sales activities during visits for meter installation?</i>
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(Response provided in September but copied here for completeness)

We agree with the proposed approach. It is essential that the consumer experience is excellent, from early communications to completed installation, to build confidence in the new services. This is best achieved through a Code of Practice agreed by all suppliers and embedded within their modified licences. The Code will ensure that consumer communications, installation planning, installation visit (including installer identification, handling of difficult access, special provisions for elderly or disabled) and installation feedback are executed consistently and seamlessly, irrespective of supplier.

Q3	<i>What do you consider as acceptable and unacceptable uses of the installation visit and why?</i>
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(Response provided in September but copied here for completeness)

Installation visits should be only for physical works and consumer familiarisation, not sales - at least for the primary installation visit. If a subsequent visit is needed to fulfil a specific consumer driven order for higher value services (e.g. premium IHD, integration of micro generation products), then limited sales approaches could be included. The installer should be able to supply the consumer with collateral relating to any advantageous Government, local authority or energy supplier schemes (including energy saving schemes and guidance related to the Green Deal). The installer should ensure that the consumer is shown how to execute key transactions, such as change of supply, selection of tariffs, prepayment, resetting of supply after outage/disconnect and fault reporting.

The Code of Practice could be based on existing codes, such as ERA's "Code of Practice for Face-to-Face Marketing of Energy Supply". BT has considerable experience of best practice in customer installation activities and would be pleased to share this with Ofgem and DECC to ensure that the correct mechanisms are implemented within the suppliers' licences.

Q4 *Do you agree with our proposed approach to ensuring that the IHD is not used to transmit unwelcome marketing messages?*

(Response provided in September but copied here for completeness)

We agree with the proposed approach. The basic IHD must display energy usage and charging data only (as per specifications to be agreed) and not carry sales content. Any such sales content should be carried via separate channels (email, correspondence etc). If the IHD is used for supplier-specific sales material it makes its use by other suppliers (e.g. gas) or transfer to other suppliers on change of supplier much more difficult. Additional functionality (and marketing / sales content) could be part of an enhanced offering that the consumer would choose to have.

Q5 *Do you agree that consumers should be able to obtain consumption information free of charge at a useful level of detail and format? How could this be achieved in practice?*

(Response provided in September but copied here for completeness)

Consumers are, based on the definition of the Data Protection Act, the Data Subjects and should therefore have appropriate control of what is 'their' data. They should, of course, be able to access their consumption information, free of charge, at a useful level of detail and format. However, we believe that further consideration must be given to the definition of "useful levels", the governance around providing this data and how they will be enabled to undertake this role effectively.

Consumers will use this data for many purposes, and will require it in many formats. It must therefore be provided in a manner that is user friendly, and easily exportable to a range of devices using a secure, industry standard format.

This will be difficult to achieve in practice if consumer data is mastered in the meters themselves, which are not designed for this purpose. A practical answer to this need would be for the DCC to hold a secure central repository of this data, which the customer could access when required. This approach would address many of the challenges around data privacy and security, and would assist in supplier switching.

Q6 *Do you consider that existing protections in the licence are sufficient to ensure that consumers are not remotely switched to prepayment mode inappropriately?*

The current protections in the licence provide a good degree of protection to customers. However, the introduction of smart metering and the ability to activate prepayment mode remotely changes the business processes that the current protections support and therefore careful consideration should be given to introducing some additional protections in the new process. These could be drawn by reference to the experience and consequent procedures relating to switching between electronic communications access suppliers, as there are many similarities which may be instructive. The regulatory and administrative structures put in place to manage ECNS provider switching may be suitable or analogous for those applicable to energy and water when this switching is done electronically.

The current process typically requires a visit to the premises by an engineer to install a prepayment meter. This provides two protections in the current process. First, the meter installer ensures that the meter is accessible to the customer for topping up the meter. This

protects consumers against being switched to prepayment without understanding the consequences of their meter location. Second, the identity of the premises and the customer is validated along with their desire to switch to prepayment. This protects customers against the possibility of being inadvertently switched to prepayment due to data errors in supplier systems.

Therefore, consideration should be given to the following potential additional protections:

- initial meter installations should include an assessment of the suitability of the installed location for prepayment. This assessment will need to take into account the new top-up methods that smart metering will enable (e.g. remote top up after a retail purchase). This assessment might be conditional to account for specific customer needs (e.g. not suitable for elderly or infirm customers)
- the switching of a customer to prepayment could require the customer to authorise the switch on the meter or the IHD to ensure that the correct address and customer has been switched. This might be an interim mechanism until the quality of data held by suppliers and the DCC can be proven.

Q7	<i>Could provision of an appropriate IHD help overcome meter accessibility issues to facilitate prepayment usage?</i>
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Although the provision of an IHD could help overcome accessibility issues with prepayment by allowing a customer to interact with the meter without requiring physical access it, it is not the primary way in which smart metering will overcome issues with meter accessibility. Instead remote top-up via the DCC will overcome the majority of the access issues that prepayment meters currently face. It is expected that the majority of top-ups could be achieved remotely via web, phone or retail channel that will generate a remote top-up of the meter via the DCC.

There will remain a requirement to enable top-ups in the absence of the DCC and the IHD may have a role in this. However, using the IHD in this way may create a number of issues that will need to be considered along with the benefit of increasing the availability of prepayment. These include:

- enabling the IHD to support prepayment input may require additional physical features to be included on the IHD (e.g. a numeric key pad) which will increase the cost of these devices. Providing the required functionality using a small number of soft keys will result in a poor user interface which many consumers (particularly vulnerable ones) may find confusing
- additional software functionality and security may be required as the IHD can now be an attack vector for prepayment fraud
- if the IHD is used as a fall back in the event of the failure of DCC communications enabling remote top-up then there is a risk that it may have been lost or broken by the time it is used.

Given that this functionality is only required in the event of the failure of the DCC communications, it is unlikely that the additional costs would deliver sufficient benefit to justify their inclusion if the link to the DCC is sufficiently robust.

Q8	<i>What notification should suppliers be required to provide before switching a customer to prepayment mode?</i>
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In general, we would expect the notification points and triggers in the process of switching a customer to prepayment to remain largely the same as they currently are. However, the ability to undertake this process remotely would mean that the data checking within the process would need to be more rigorous. Specifically, consideration should be given to requiring the supplier to send a notification to the meter via the DCC which requires the

consumer to accept prior to the activation of prepayment. This will protect the customer against data errors in supplier or DCC systems causing the incorrect account or meter/address to be switched.

Q9	<i>Do you believe that suppliers should be required to provide emergency credit and “friendly credit” periods to prepayment customers or whether, as now, this can be left to suppliers?</i>
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We have no comment to make on this question.

Q10	<i>Do you consider that an obligation similar to Prepayment Meter Infrastructure Provision (PPMIP) may be required?</i>
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We have no comment to make on this question.

Q11	<i>Is the obligation which Ofgem is proposing to introduce on suppliers to take all reasonable steps to check whether the customer is vulnerable ahead of disconnection sufficient? If not, what else is needed?</i>
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We have no comment to make on this question.

Q12	<i>What notification should suppliers be required to provide before disconnecting a customer?</i>
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We have no comment to make on this question.

Q13	<i>Do you have any views on the acceptability of new approaches to partial disconnection and how they might be used as an incentive to pay bills?</i>
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We have no comment to make on this question.

Q14	<i>Do you agree with our approach for addressing issues related to remote disconnection and switching to prepayment?</i>
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We have no comment to make on this question.

Q15	<i>Have we identified the full range of consumer protection issues associated with the capability to conduct remote disconnection or switching from credit to prepayment terms? If not, please identify any additional such issues.</i>
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As remote switching and disconnecting remove the final “failsafe” check of a meter operator visiting the premises and validating the location of the meter, it places a much larger emphasis on the quality of data held by suppliers and the DCC. Therefore, consideration should be given to defining a code of practice for ensuring and validating the quality of data held for these purposes. Similarly, the guidelines surrounding how suppliers interact with customers to notify them of switching or disconnection remotely should also be reviewed to ensure that they can effectively and fairly deal with vulnerable groups or those who do not have a good understanding of English.

Q16	<i>What information, advice and support might be provided for vulnerable consumers (e.g. a dedicated help scheme)? Who should it be provided to?</i>
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We believe that the recommendation of placing an obligation on suppliers to set up a central body to oversee the development and running of a dedicated help scheme is a good one. We would recommend that this model is likely to be effective in dealing with a number of concerns and issues identified in the Prospectus. We recommend that the dedicated help scheme should look to take advantage of the broadest range of expertise from the industry, other industries which face similar consumer protection issues, and relevant third sector organisations. This service should be independent of retailers to avoid any perception of sales and marketing and should look to exploit the skills and capability that third sector organisations have in engaging with potentially difficult to reach groups.

Q17	<i>Do you have any comments on our proposals to prevent upfront charging for the basic model of smart meters and IHDs?</i>
<p>We agree that preventing upfront charges on the basic models of smart meters and IHDs is important in not creating consumer resistance. However, we are also concerned that requiring customers to sign up to a higher tariff could also be an inhibitor to voluntary take up. Therefore, we believe that it needs to be clear to consumers how they might realise the benefits of smart metering. This might require the bundling of smart metering with other measures that would reduce energy consumption to result in a net overall reduction of costs for consumers taking on smart meters. Otherwise, there is a risk that Smart Metering will be viewed as being more expensive for consumers, resulting in a lower rate of voluntary take up and passive resistance to other take up (e.g. not attending appointments to fit meters).</p>	

2.4 Data Privacy and Security

Q1	<i>Do you have any comments on our overall approach to data privacy?</i>
<p><i>(Response provided in September but copied here for completeness, with some additional comments added below)</i></p> <p><i>“The customer shall choose in which way consumption data shall be used and by whom, with the exception of data required to fulfil regulatory duties”.</i></p> <p>We believe in principle that this is a positive step and will go some way in alleviating consumer concerns over data privacy. However, we also believe that there are a number of key points that would need further and careful consideration around data privacy:</p> <ul style="list-style-type: none"> • Privacy by Design: Data protection must be embedded within the core design of the system, should be introduced early and needs to be in place for the mandated rollout. In practice, therefore, this protection needs to be in place prior to the DCC in order to prevent experiences such as those which occurred in the Netherlands, which gave rise to concerns over privacy that led to its smart metering bill being initially rejected. • Consumer Consent: Whilst we are in agreement that consumer consent for the collection, use and disclosure of meter data should be implemented, we believe that further consideration needs to be given to the requirements of customers who may not be in a position to make informed decisions around what they are consenting to, and the level of consent that they have provided. Enforcement of consumer consent is also a cause for concern as the Data Protection Act, though holistic for personal data protection, may not be granular enough to cover specific meter data privacy. Further, serious consideration needs to be given to how such consent management will be achieved where individuals are not ‘digitally enabled’ in an environment where meter & meter display functionality will be limited. • Data Storage: Mastering of data within the meters for a period of 12 months in theory provides greater control and ownership to the customers, however it also raises questions around data access and resilience: <ul style="list-style-type: none"> ○ A number of industry bodies require access to this data, not least the suppliers who would require regular and ad hoc access to data, albeit aggregated in order make key customer and tariff management decisions ○ Mastering data only within the meters will create a technological as well 	

as process impracticability

- Singular data storage with no immediate back-up strategy will create resilience issues where meter data is lost by consumers (either wilfully or inadvertently).

The Programme should therefore give consideration to the possibility of a centralised data store, perhaps within the DCC. We would envisage the DCC working alongside the Information Commissioner's Office (ICO) to create specific meter data protection standards which might be included as part of the DCC license.

- Data Integrity & Confidentiality: Storage of large amounts of data locally within the meters also introduces security concerns:
 - The ability to hack into, or interrogate meters, would allow for tampering or misrepresentation of meter data thus causing data integrity issues.

There is a further element of concern around sharing of meter data, for example through rental turn-over or change of ownership of property. A change in tenancy status would mean new occupiers having access to meter data from previous incumbents. This could also cause a problem if residences change from domestic to non-domestic status, as this then raises questions over ownership of the data. Clearing down or sanitising this data without any other form of storage or data source would again cause loss of data, especially if the customer wishes their data to move with them.

But in addition, we do consider that both the EU Data Protection regime and the consumer interest necessitate the creation of

- an effective and legally enforceable Code for smart meter data and
- a single, effective and duly empowered body fully able to monitor and enforce the application of data protection principles in relation to such data.

Given that data from smart meters may relate to at least two utilities plus payment mechanisms such as e-payments and m-payments, the possibility and risk of overlap, confusion and inefficiency are substantial.

Rapid take up of smart metering will be dependent on the creation of public confidence as regards protection of the data it generates, necessitating both a single Code and an appropriate body with full and sole powers within a legally binding regime.

Q2	<i>We seek views from stakeholders on what level of data aggregation and frequency of access to smart metering data is necessary in order for industry to fulfil regulated duties.</i>
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(Response provided in September but copied here for completeness)

We will await guidance from the industry on what levels of data aggregation and frequency of access to smart meter data is required.

However, at this stage, we would like to draw the Programme's attention to the reality that whatever levels and frequency may be agreed, these will have material implications on the security design and cost of operations of the overall solution and especially the 'thickness' of services required to be provided by the DCC. At this stage, it is also important to note that we believe that some DCC functionality will be

required throughout the roll-out stages.

Q3 Do you support the proposal to develop a privacy charter?

(Response provided in September but copied here for completeness)

Yes, a privacy charter should be developed to reduce concerns of the public, to meet the expanding amount of digital information and thereby provide a framework for governance of smart metering operations. However, in recent times, the privacy debate has moved away from surveillance and analogue interception and into networks capable of carrying millions of packets of personal data around the world to various companies and other third parties.

A privacy charter is therefore needed that takes account of these changes. To enable such a charter, the industry needs to be prepared to report against conformance with the charter, which will therefore need defined processes to underpin it and to deliver that adherence. To ensure such accountability, a method for auditing is also required. In the longer term, we believe that the DCC is best placed to oversee and manage compliance against the privacy charter, however in the interim, this will be problematic and a suitable body will need to be appointed to undertake the enforcing role.

Q4 What issues should be covered in a privacy charter?

(Response provided in September but copied here for completeness, with some additional comments added below)

The following issues need to be considered in any privacy charter:

- how to ensure anyone handling or processing data is held accountable and accepts ownership of risk
- how to guarantee individuals are providing informed consent in a multi-stakeholder environment
- how to ensure information is accurate, available and have the ability to be corrected
- how to assert all processes and the existence of services requiring access to consumer data are transparent
- how to promise consumer safety and privacy, but be sure to limit the collection of the data to the minimum amount of personal information for the task required
- to what extent does the system manage consumer demand for data in the preference they wish
- how to enforce permissions for access to data that ensures the requirement of consent for data use or disclosure
- how to reassure the public that any data held cannot disadvantage anyone, but enable the consumer to challenge the system as to what data is held and for what purpose
- how to guarantee expectations to the charter (such as data required for national security purposes or competition) that does not infringe on the principles of the charter.

In addition, we would expect that any obligations on the consumers would be included in the terms and conditions in the agreements between the consumers and suppliers or third parties.

This could also be used to regulate:

what data (captured by the smart meter) it is appropriate for suppliers of other services to request from consumers

- what access will be permitted to aggregated anonymised data by third parties

(e.g. insurance companies, marketing companies) for the purposes of data analysis and profiling.

Q5 *Do you agree with our approach for ensuring the end-to-end smart metering system is appropriately secure?*

(Response provided in September but copied here for completeness)

The Prospectus does not make it clear how the smart metering system is to guarantee that the end-to-end solution will be secured, especially in terms of the 'multiple staged' overall deployment.

We offer the following comments:

- There is a need for a central security governance authority responsible for the protection of the smart metering system that will ensure that security standards are agreed, adhered to, and independently audited. This body will facilitate co-operation across the industry, and will ensure that public and industry perception of the effectiveness of these standards remains positive.
- All stakeholders agree that interoperability is a key driver to the success of an end-to-end secure system. The smart metering system requires a central monitoring and brokering service to ensure all smart metering elements are able to interoperate in a secure manner from the outset within a rationalised process framework with its associated cost savings for all parties.
- The approach of the Security Policy Framework (SPF) followed so far, that includes a CESG IAS 1 technical risk assessment with its inbuilt leaning to the confidentially perspective of technical security, does not appear to provide a truly holistic security strategy and is unlikely to be understood or complied with by either the supplier and consumer communities. Any approach for securing a system end-to-end must include the availability and integrity impact perspectives and people and process controls perspectives if a holistic, and end to end, security solution is to be achieved.
- Although privacy is the major focus and concern for the Programme, equal consideration must be given to integrity and availability of the service from a supplier and consumer perspective. Integrity and availability, as well as privacy, should therefore also be major drivers in securing any system.

We recommend that the HMG Security authorities need to be more fully engaged than at present, along with all industry parties and all as members of the PSAG, to reach an agreement that the end-to-end system will be appropriately secure.

2.5 Implementation Strategy

Q1 *Do you have any comments on our proposed governance and management principles or on how they can best be delivered in the context of this programme?*

Addressed in September response.

Q2 *Are there other cross-cutting activities that the programme should undertake and, if so, why?*

Addressed in September response.

Q3	<i>Do you agree with our proposal for a staged approach to implementation, with the mandated rollout of smart meters starting before the mandated use of DCC for the domestic sector?</i>
Addressed in September response.	
Q4	<i>Do you have any comments on the risks we have identified for staged implementation and our proposals on how these could best be managed?</i>
Addressed in September response.	
Q5	<i>Do you have any other suggestions as to how the rollout could be brought forward, including the work to define technical specifications, which relies on industry input?</i>
Addressed in September response.	
Q6	<i>Do you agree with our planning assumption that a period of six months will be needed between the date when supply licence obligations mandating rollout are implemented and the date when they take effect?</i>
We have no comment to make on this question.	
Q7	<i>Do you have any comments on the activities, assumptions, timings and dependencies presented in the high-level implementation plan?</i>
Addressed in September response.	
Q8	<i>Do you have any comments on the outputs identified for each of the phases of the programme?</i>
Addressed in September response.	

2.6 In-home Display

Q1	<i>We welcome views on the level of accuracy which can be achieved and which customers would expect, in particular in relation to consumption in pounds and pence.</i>
<i>(Response provided in September but copied here for completeness)</i>	
<p>The detail or precision of the display must be meaningful to the consumer to provide them with sufficient feedback to show the results of changing behaviour. This can be provided in two ways. First by providing a spot usage rate to show the effect of turning specific devices on or off. It is likely that this data does not have to be highly accurate as the comparator is important rather than the absolute value.</p> <p>The second type of display is a cumulative display of usage to show trends over time. Again, a high level of accuracy might not be required in this instance. However, there is a risk that the consumer might compare the IHD information with their billing information. If there is a significant inaccuracy in the IHD display then this could generate a significant number of additional calls to retailers from consumers querying their bill. Therefore, the level of accuracy needs to be set so that over a reasonable period, say a year, that the IHD is not likely to be at variance with any remote system produced bill. We would also suggest that at install time the consumer is made aware that the IHD is primarily intended to show trends in usage and not as a means of validating the bill.</p> <p>Given that the maximum hourly charge for power is likely to be less than £5 (based on a price of 12p per KWh for electricity and a maximum demand of 25 KWh), precision to the nearest pence (or 5 pence) would seem adequate for the hourly or instantaneous results</p>	

(giving an accuracy of better than 95%). There would appear to be no benefit of sub pence display to the majority of consumers.

Q2 *We welcome evidence on whether information on carbon dioxide emissions is a useful indicator in encouraging behaviour change, and if so, how it might be best represented to consumers.*

(Response provided in September but copied here for completeness)

The means of calculating and displaying emissions information is an issue that needs careful consideration. Consumers will have different perceptions of what is high or low usage. This has been shown in the car excise duty arena where the g/km CO₂ metric is not widely understood. It is therefore important that the levels of emissions are expressed in every day terms meaningful to consumers. One possibility is to have pre-set profiles for household types against which comparisons can be made in real time, with consumers able to adjust their profiles. Another is for the profiles to present equivalence examples, such as consumption for use of heating over consumer selected period being equivalent to CO₂ absorption of x number of trees. Any local micro-generation would not present as a CO₂ credit as it is not possible to relate to the way in which that energy is used (and therefore CO₂ generated).

Q3 *We welcome views on the issues with establishing the settings for ambient feedback.*

(Response provided in September but copied here for completeness)

From trial experience, where a display shows different colours depending on energy usage, consumers were much more aware of when high power usage was happening and would take steps to understand why. The settings were made by the user but could be system optimised.

However, there are a number of issues with providing such a display. These include:

- Will the display be based on relative usage (showing decreases) or absolute values (showing consumption relative to a benchmark)?
 - If consumers have high electricity usage, even significant changes in their behaviour may not result in discernable changes
 - Consumers with low usage (e.g. in a well insulated home) may become complacent even though there are changes they could make to lower their consumption further
 - Ambient displays would not encourage consumers to continuously improve their energy usage as once consumers achieve a green light, behavioural change will tend to plateau.
- What will the ambient displays be profiled against? Property type, location, age? We would expect that a range of profiles would need to be available to the consumer
- Will two ambient displays be required for each energy type (gas and electricity) or will a combined display be used?
- What level of additional processing power and software complexity will be needed to calculate the ambient settings for display? Will these have a significant cost impact upon the IHD?
- Consideration needs to be given to the possibility of ambient lighting causing unwelcome behaviours. For example, vulnerable elderly people may be discouraged from turning on the heating during periods of cold weather if doing so results in a negative ambient display
- Will the use of different colours for the various day of use tariffs be helpful to consumers?

Q4	<i>Do you think that there is a case for a supply licence obligation around the need for appropriately designed IHDs to be provided to customers with special requirements, and/or for best practice to be identified and shared once suppliers start to roll out IHDs?</i>
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(Response provided in September but copied here for completeness)

We support the principle that consideration needs to be taken of people with special needs. One way of doing this would be to have a smaller number of specialist in-home displays that consumers could choose that could deal with their needs.

Specialist organisations such as Age Concern, RNIB etc should be consulted on how these layouts could be made more meaningful and readable by those who would not be comfortable or able to engage with the standard offering. The results of these consultations should be embodied into a set of best practice guidelines which suppliers should be expected to adhere to.

The assumption that these solutions are going to be more expensive need not necessarily be true. Simple solution are often the best, this can be compared with the large display and button phones that are available. This supports the view that IHDs should be available from other sources that just the retail energy companies and that ubiquitous supply of one device may not be the right answer.

Q5	<i>We welcome evidence on whether portability of IHDs has a significant impact on consumer behavioural change.</i>
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(Response provided in September but copied here for completeness)

The ability to move the display around the premises would be beneficial, as this would allow for the quick wins (around the home) which are probably the most substantial wins in the long terms and bring about a change in consumer behaviour. If this can be maintained then the benefits will be long term and the advantage of the display for this type of benefit is likely to reduce slightly anyway.

The advantage of a portable display is that the consumer in the long term is likely to find a favoured location that is most convenient which may or may not have a power socket accessible. This will continue to provide them with a view of their consumption and provide the long term information they need to manage their usage such as potential tariff benefits etc.

An option worth investigation is whether the provision of a small solar panel within the device similar to those in calculators would be sufficient to recharge a local store to power the device. Alternatively, the ability for aftermarket IHDs to be purchased by consumers may allow them to buy portable IHDs if they require one (or more). The consumer will need to be advised that if moving the IHD they need to ensure that it retains connectivity to the meter (similar to moving a portable laptop utilising wireless connectivity).

We will investigate whether evidence can be made available to support these recommendations.

Q6	<i>Do you agree with the proposed minimum functional requirements for the IHD?</i>
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(Response provided in September but copied here for completeness)

The IHD has two purposes:

- To enable consumers to interact with some basic functionality of the meter (e.g. pre-payment top-up and gas or electricity reconnection acknowledgement)
- To provide a display of information about a consumer's energy (and in the future

water) usage.

The first of these will be required where consumers will not be able to easily access the meter itself, and as such should be included in the minimum functionality.

The second is to support consumers in changing their energy usage behaviour by providing feedback to them. To this end, there is a greater range of functionality that can be considered. However, this additional functionality will increase the cost of devices and therefore presents a trade-off between the costs of providing devices by the suppliers against the level of engagement of consumers to deliver the behavioural change necessary.

Although the research evidence into the use of IHDs by consumers is mixed, there is some evidence that most consumers use the display for the first few months allowing them to reduce their energy usage and make savings. However, in the long run, many consumers stop using their devices and simply consign them to the cupboard drawer. In light of this rapid tail-off of usage of the IHD, we recommend that the IHD provided as part of the smart metering rollout should provide a very basic level of information display. The basic IHDs should have the following characteristics:

- The display needs to be portable if possible to allow for ease of locating in the home, so long battery life is important.
- The display needs to be easy to read and easily configurable to the consumers needs and wishes, e.g. no point in showing gas consumption if the consumer does not have gas.
- The units that the consumer sees need to be easily changed to meet their needs, some will understand Kwh but other may wish pence per minute/hour/day etc.
- Careful consideration needs to be given to how much information is displayed and how it is displayed to ensure its intelligibility. It is recommended that the Programme issue guidelines on this to ensure a minimum standard is provided on the “free” IHDs.

However, smart meters should also provide open, secure interfaces to their data to allow a market in after-market IHDs and other devices (e.g. TV Set-Top boxes) that would allow consumers who are dissatisfied with the base level of information provided but remain motivated to make behavioural change and so wish to “upgrade” their IHD. These external devices may also be able to use additional information from the Internet via a broadband connection to enhance the display. The types of additional functionality that the aftermarket devices might provide includes:

- selection of a usage profile such that consumers can compare their profile day to day
- highlighting periods of cheaper electricity tariff. A traffic light system off-tariff may be effective. Different time of use tariffs may be shown in different colours to enable ease of notification to consumers
- the presentation of carbon emissions could also be provided for more ecologically conscious consumers. However, it is acknowledged that the calculation of this information is far from straightforward.

The free IHD, which might have a short life, needs to be of low cost to maximise the initial benefits. The consumer can then decide how and with what device they will engage with for their on-going energy management. The open standard interface will ensure that there can be a number of providers who can compete in this space.

Additionally, we do not believe that account information should be displayed on the IHD as it would require additional security measures to be put in place which would drive up cost. There will also be situations where members of the household may need access to the IHD without requiring access to the account information (e.g. lodgers). The display of account information is a data privacy issue. The requirement to manage access to information

extracted from the meter needs further analysis.
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Q7	<i>Do you have any views or evidence relating to whether innovation could be hampered by requiring all displays to be capable of displaying the minimum information set for both fuels?</i>
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We have no comment to make on this question.
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Q8	<i>Do you agree with the proposals covering the roles of and obligations on suppliers in relation to the IHD?</i>
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<i>(Response provided in September but copied here for completeness)</i>	
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We agree with the recommendation that the supplier provides the base IHD with the installation of the smart meter. There is also the potential to allow consumers to have a creditor token towards a more sophisticated device; this would reduce the number of abandoned displays. There would need to be careful terms and conditions around the grounds for replacement to protect the supplier. There would need to be an obligation on the consumer to take reasonable care of the device and supplier to have to replace in the case of equipment failure rather than misuse or abuse. In the case of the pre-payment device the ownership of the device might be less clear to meet the requirements of the security required to maintain data integrity.

The initial gains from the IHD are likely to be in the early adoption period when consumers start to understand the impact of their lifestyle and equipment usage. This will be translated into behaviour changes should they wish to save energy or money. The period of one year is likely to have these behaviours style either engrained or not adopted depending on the consumer. The benefits of the IHD after that period are therefore likely to be substantially lower so the value of keeping the IHD in order are less likely to be worthwhile so the period of one year responsibility would seem reasonable.

2.7 Non-domestic Sector

Q1	<i>Are there any technical circumstances where only advanced rather than smart metering would be technically feasible? How many smaller non-domestic customers have U16 or CT meters and what scope is there for full smart meter functionality to be added in these cases?</i>
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We have no comment to make on this question.
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Q2	<i>Do you agree with our proposed approach to exceptions in the smaller non-domestic sector?</i>
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Exceptions are undesirable, as they will reduce the level of benefits delivered by smart metering. Therefore, they should only exist where the cost of delivering smart metering exceeds the benefits delivered or there is an unacceptable risk associated with deploying smart metering technology and processes.

When considering the benefits, consideration needs to be broader than the costs and benefits associated with a single instance. For example, a large number of exceptions may require retailers and DNOs to operate parallel systems increasing their costs. Similarly, coverage which is not approaching universal may limit the ability of stakeholders to realise the benefits associated with load management.

Therefore, the exception surrounding coverage needs to be refined to ensure that it is only applied in extreme circumstances where connection is genuinely cost prohibitive. For example, a cost threshold could be inserted into the exception based on the price of providing the DCC-based service to (say) 99% of the population.

We are also concerned about the exception on the grounds of supply interruption being risky or expensive. Given that supply can be interrupted currently for a variety of reasons (e.g. a fault at the substation, cable breakage due to ground works), it seems unwise to suggest in policy that the risk of supply interruption is too great to consider. If the consequences of supply interruption are excessively risky or costly, we would suggest that the customers need to implement mitigation measures independent of the smart metering programme, as smart metering will not materially increase the risk of loss of supply.

Q3	<i>Are there technical circumstances that we have not considered that would justify further flexibility around installation of either smart or advanced meters?</i>
We have no comment to make on this question.	

Q4	<i>Do you agree with the proposed approach that use of DCC should be optional for non-domestic participants in the sector?</i>
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We understand the reasoning that has led to the proposal that the use of the DCC should be optional for non-domestic participants in the sector. We believe that this decision has a number of implications that should be considered when analysing how these can be overcome. These include:

- other industry players may be interested in the data (e.g. DNOs for load planning purposes) and the DCC provides a hub through which data can be routed (and anonymised if required);
- alternative solutions should adhere to the same level of end-to-end security as the DCC;
- the DCC will be required to provide universal, national communications coverage and to obtain the lowest unit cost per premise – this is best supported by all smart metering traffic being placed over the DCC WAN.

We also believe that further investigation should be undertaken into the basis of the competition in the current market. If this competition is not primarily on the basis of the WAN technology and the market participants are not primarily communications companies (e.g. Mobile Network Operators), then a possible alternative to a full opt out would be to mandate the use of the WAN elements of the DCC. This could enable the same end-to-end security as the domestic sector to be implemented and allow for multiple routing of data if required. We recognise that there would need to be a migration path to this model that minimised asset stranding and allow existing market participants to migrate onto the DCC communications at natural break points in their development cycles to minimise additional investment cost.

We recognise that in this model, the services that the DCC provides to the non-domestic model would need to be offered under fair, transparent and non discriminatory terms and conditions to ensure a level playing field. Developments of the service also need a fair competitive environment to ensure that changes to the service are delivered in line with industry requirements and do not unfairly favour any market participants.

Q5	<i>If use of DCC is not mandated for non-domestic customers, do you agree with the proposed approach as to how it offers its services and the controls around such offers?</i>
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The proposed approach set out in 4.35 and 4.36 appears to be a sound basis on which the

DCC could be allowed to compete in the non-domestic sector. We believe it is important that the DCC acts in a transparent and non discriminatory way and that it can offer value-added services into markets such as the non-domestic sector as it represents a source of sector knowledge/specialism and market innovation.

The key elements of this regulatory model are:

- core services (such as the DCC secure data communications network) are available to all market participants under transparent and non discriminatory terms;
- the development of core services is managed by a transparent process that allows equitable input from all market participants;
- value-added services can be provided as long as they are developed and managed using only publically available information and interfaces.

Q6	<i>To what extent does our proposed approach to the use of DCC for non-domestic customers present any significant potential limitations for smart grids?</i>
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We have no comment to make on this question.

Q7	<i>Is a specific licence condition required to ensure that metering data for non-domestic customers can be provided to network operators or DCC, and should any provision be made for charging network operators for the costs of delivering such data?</i>
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(Response provided in September but copied here for completeness)

On the question that you are raising, we believe that it would be helpful to augment the existing Distribution and Use of System Agreement requirement with a licence obligation, and indeed wonder whether there is also a role here for the Smart Energy Code. The inter-relationship between the licences, agreements and Codes will be an important element of the arrangements. In addition we wonder whether this condition focuses more on charging arrangements for connectivity and usage, rather than metering data. The requirement for data to be provided free of charge implies more of a "from time to time" arrangement than will be the case when smart metering is rolled out. We also note the recommendation that the use of the DCC is not mandated for non-domestic customers given the existence of a current market - however the DCC will still potentially be seen as "dominant" due to the comparative scale of the consumer market. We therefore suggest that a licence provision should be made for the provision of metering data for non-domestic customers and that a charging mechanism should be established (which needs to be competitive with the existing market but regulated).

Q8	<i>How can interoperability best be secured in the smaller non-domestic sector?</i>
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We have no comment to make on this question.

Q9	<i>What steps are needed to ensure that customers can access their data, and should the level of data provision and the means through which it is provided to individual customers or premises be a matter for contract between the customer and the supplier or should minimum requirements be put in place?</i>
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(Response provided in September but copied here for completeness)

For smart metering to achieve its stated benefits for the non-domestic sector, we agree that customers should be able to obtain consumption information free of charge as with the domestic sector at a useful level of detail and format, however the practicality for achieving this needs to be tested and any standards required to do so should be shaped by the industry. We believe that a centralised access control layer is required to secure the communications and data infrastructure for the non-domestic customers. Access control

needs to be bi-directional to ensure that the industry has specific and role-based access to meter data while assuring that scheduled reads, alarms, configuration updates and real-time messages are sent to a valid, authenticated end-points which could be an ICT system (Information and Communication Technologies) for a non-domestic customer. Any access must follow the principle of "Defence in Depth" and include basic controls like firewalls and gateways, but should also include Identification, Authorisation, Authentication and Public Key Infrastructure (PKI).

Q10	<i>Do you agree with our approach to data privacy and security for non-domestic customers?</i>
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(Response provided in September but copied here for completeness)

More consideration is required for non-domestic customers as regards the approach to data privacy and security. It is even more imperative that standards and interoperability agreements are established early in the smart metering lifecycle, as failures could have larger impacts on the system and customers due to the additional accumulation and association requirements of data collection. This in turn may require extra security enforcing functionality to protect the non-domestic customers. We recommend, rather than an overarching high-level system approach, a separate threat, vulnerability, impact and risk assessment for non-domestic consumers needs be produced. This will enable a more pragmatic approach to security rather than enforcing any extra restrictive security enforcing functionality on to domestic customers. All risk assessments need be shared with suitable industry suppliers, as this will ensure that the "secure by design" principle and a common baseline is achieved. Once this is released, an industry-attended security working group would need to agree interoperability and security standards. This needs to be supported by the setup of a Security Governance Framework to ensure compliance and would furthermore need to be supported by an overarching Security Management Centre (SMC). The SMC would have ability to monitor; enforce and incident manage any issues or non-compliance on the smart metering system on behalf of the Security Governance Authority.

Q11	<i>Is the proposed approach to rollout (for example in terms of targets and a requirement for an installation code of practice) appropriate for the non-domestic sector?</i>
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We have no comment to make on this question.

2.8 Regulatory and Commercial Framework

Q1	<i>Have we identified all of the key elements that you would expect to see as part of the Smart Metering Regulatory Regime?</i>
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(Response provided in September but copied here for completeness)

We support in principle the broad regulatory regime proposed, particularly with respect to customer protection, certainty of delivery, competition and charging. We also agree with the key regulatory vehicles identified. We also suggest that adherence to standards/technical specifications and to service level agreements should also be explicitly covered within the regime.

Q2	<i>Do you agree with the proposal to establish a Smart Energy Code?</i>
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(Response provided in September but copied here for completeness, with some additional comments added below)

Yes. Smart metering is a new service, critical to the country and its infrastructure, the industry and most importantly consumers. A dedicated code is needed, embracing smart metering together with other key elements of effective energy management (certainly smart grid, possibly also smart homes and communities). In the interests of timescales, we suggest that the code initially focuses on smart metering and grid applications (to enable early establishment of the DCC) and is extended to smart homes and communities as soon afterwards as practicable as well as water in the longer term.

We believe that close interworking between DECC/Ofgem on the one hand and Ofcom on the other will be required to deal with the substantial risks derived from the overlapping regulatory regimes applicable to the rollout of smart metering. We believe that some or all of the meter, HAN, WAN and communications module fall within the definition of electronic communications apparatus for the purposes of the Electronic Communications Code ("ECC"). It also follows that the DCC is likely to be providing an electronic communications service and perhaps a network to its electricity industry customers and that therefore the basis on which it does so is subject to the provisions of the Electronic Communications Directives, especially the Framework Directive, the Authorisations Directive and the Universal Service Directive. Each of these instruments, which have been implemented in the UK by Regulations, contains provisions, especially restrictions, applicable to the imposition of regulatory obligations on providers of Electronic Communications Networks and Services. These will need careful review in the devising of the regulatory regime applicable to smart grids and smart meters.

In addition, we consider that smart metering data covers a very wide range of types of information. The issue of overlap between various applicable utility codes is quite a significant one. It will not be sufficient, therefore, just to put in place a Smart Energy Code.

Data from smart meters may relate to at least two utilities as well as information about payment mechanisms and transactions such as e-payments and m-payments; moreover it is probable that the DCC, the HAN and the WAN will all to some extent immediately be subject to the Electronic Communications Code.

In these circumstances the possibility and risk of overlap between codes, leading to confusion and inefficiency or worse, are very substantial. We believe that it is essential at the start to design a coherent regime which analyses and deals effectively with all the several overlapping jurisdictions applying to these data; a Smart Metering Code alone will not be adequate.

Q3	<i>Do you have any comments on the indicative table of contents for the Smart Energy Code as set out in Appendix 3?</i>
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On the indicative table of comments we have the following points:

- Parties and Accession Process: with a Framework Agreement proposed, and licence and other obligations (for example in relevant agreements) to comply with the SECode, the structure of a Parties and Accession sections should not follow the BSC (as this list seems to do) which is a confusing and unhelpful way of setting out the requirements, but instead there should be reference to the categories of user covered by the SECode and to the Framework Agreement, which will contractually bind users.
- Smart Energy Code Panel: it is stated that the Panel will be responsible for the governance of the SECode. It would probably be better for one party, for example the DCC, to be responsible for governance with the support of the

Panel but with industry consultation for changes.

- In relation to Disputes, managing disputes across industries may require a separate dispute protocol to apply.

Q4	<i>Do you have any comments on the most appropriate governance arrangements for the Smart Energy Code?</i>
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The governance will need to span the various industries and will need to be established in the various licences. It will be important to have an arrangement which enables changes to take place but which also offers certainty and predictability. As well as establishing the process, the criteria against which the Authority may approve a change will be most important. It would be helpful if unnecessary procedural inflexibility could be avoided.

Q5	<i>Do you agree with the proposals concerning the roles and obligations of suppliers in relation to the WAN communications module?</i>
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Elsewhere in our response, we have put forward proposals for WAN communications direct to the meter as an alternative option, as it retains a demarcation of responsibility between electricity, gas and water for ownership, installation and maintenance, and offers clear accountability for the communications to/from the meters.

In the case of a WAN communications module being the selected home architecture, then we recommend the module either be based on GB-wide economies of scale through competitive communications tender, or that it be offered to the market on a fair, reasonable and non-discriminatory basis so as not to create a barrier for smaller suppliers and new entrants.

Q6	<i>We welcome views as to which other additional data items should be included in the mandated HAN data set beyond the list for the IHD.</i>
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Addressed in September response.

Q7	<i>Do you agree with the proposal that the WAN and the HAN in customer premises should be shared infrastructure, with the installing supplier retaining responsibility for ongoing maintenance? If not, would you prefer to have an arrangement by which if the gas supplier is the first to install, responsibilities for the common equipment is transferred to the electricity supplier when the electricity smart meter is installed?</i>
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We agree with the proposal that the WAN and HAN in the customer premises should be shared infrastructure to avoid the costs of providing duplicate infrastructures.

We agree with the proposals that one energy supplier retains responsibility for ongoing maintenance of any shared WAN and HAN infrastructure, as this supports the accelerated rollout of smart electricity and gas meters and does not slow down the pace of the gas smart meter rollout.

We have no comment on whether responsibility should remain with the lead energy supplier or transfer to the electricity supplier, in the event that the gas smart meter is installed first and would support either proposal.

Complications may arise in cases where a gas meter (or water meter) is installed after the communications module is commissioned and communications to the HAN cannot be achieved. We consider that communications direct to electricity, gas and water meters allow suppliers to install in any order, which avoids complication when the installation cannot achieve connectivity to the hub. It also avoids service issues where connectivity to

the hub is lost, and conflicts over who is responsible for attending the premises to resolve the issue.

Elsewhere in our response, we have put forward proposals for WAN communications direct to the meter as an option.

Q8	<i>Are there additional measures that should be put in place to reduce the risks to the programme generated by early movers?</i>
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(Response provided in September but copied here for completeness)

Key risks relating to early movers and our suggested measures to reduce them are:

- a) Early agreement of functional and technical specifications (covering meters and their communications) before permitting early mover rollout of smart meters.
- b) Comprehensive and early public and industry (including journalists and analysts) communications activities so as to clearly explain the smart metering programme and the positioning of early movers. It may be worthwhile extending this to local community events, celebrity champions etc.
- c) Consider restricting early mover volumes to mitigate the risk of national optimum solutions being rendered economically unviable by an early 'dash' for the easy ones. We caution that there are numerous communications technologies that would offer suitable solutions for 60 or even 70% of the target premises. The real challenge is ensuring uniform service is available nationwide at a sensible cost, with the final 30-40% of premises being both technically and commercially challenging. An early 'dash' for the first 70% may well render uneconomic the remainder given these 'left overs' will not be geographically cohesive but will be intermingled among the 70% and likely require an alternative national infrastructure to address them. A national infrastructure is wholly affordable when amortised across the entire number of target premises, but becomes less viable as that number declines. It is for this reason that we caution that while volume early installations may feel supportive of programme acceleration, it runs the real risk of leading to an outcome whereby national deployment is never achieved.
- d) Hence we recommend that any meter deployment targets set for energy suppliers are kept low and based on industry process refinement objectives rather than meter installations.
- e) Define minimum datasets, upgradable APIs and technical standards as early as possible to prevent stranded installations and atomisation of the system.

Q9	<i>What is needed to help ensure commercial interoperability?</i>
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(Response provided in September but copied here for completeness)

We suggest that commercial interoperability needs to have the following elements in place:

- standard charging types across both electricity and gas suppliers for minimum services;
- standard minimum terms and conditions;
- pre-agreed mechanism for offsetting/balancing costs incurred by the original installer at the point of shared use of the meter infrastructure (including communications and IHD) or transfer to another supplier
- technical standards.
- common APIs.

These elements need to be included within the supplier's licences, reflected in the Smart Energy Code and governed through DCC's licence.

Commercial interoperability will be most easily achieved if the number of communications solutions and providers are minimised. A multi communications solutions environment with many complex technical and service interfaces will increase the challenge in achieving

seamless commercial interoperability.

Q10	<i>Can current arrangements for delivering technical assurance be developed to gain cost effective technical assurance for the smart metering system? If so, how would these procedures be developed and governed?</i>
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With the introduction of smart metering, technical assurance will become broader, as interoperability is now more complex – requiring communications, data structure, syntax, process and functional interoperability.

To make this a manageable process, we would recommend that the following are considered in addition to the current proposals for the creation of interface and functional specifications. These are:

- creation of “test stubs” by the DCC which will enable other market participants to undertake development. Test stubs are software and/or hardware components which provide realistic inputs/responses to simulate the operation of the real system. Development of these by the DCC would reduce the risk that the interface and functional specifications are misinterpreted by other market participants. This would supplement the MID and type testing processes currently undertaken.
- creation of a model community i.e. a set of integrated systems where suppliers can test their systems and business processes using test versions of live systems. It should be run by a “neutral body” for the benefit of market participants (possibly as a regulated service of the DCC).

In order to make it easier to identify and diagnose faults, consideration should also be given to agreeing a set of common diagnostics and checksums on meters and devices, as these will follow customers as they change retailers who may not have deep expertise in managing specific devices.

Q11	<i>Are there any other regulatory and commercial issues that the programme should be addressing?</i>
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(Response provided in September but copied here for completeness)

We understand that a review is taking place of the scope and responsibility of regulatory bodies. The communications services for smart metering will have a profound impact on the way in which in-home services are delivered, offering new ways of provisioning services to consumers. This scale of communications programme (connection to every domestic property in the country) should therefore be of strategic importance to Ofcom (as well as Ofgem) and we would therefore recommend that the appropriate Licence and code provisions are, as a minimum, shared and agreed by both regulators.

We also recommend that, in the interests of timescales, early procurement activities are undertaken to place contracts with communications service providers, in parallel with the development of DCC Licence. We support the principle that the DCC should be separate from the communications service providers.

Q12	<i>What evolution do you expect in the development of innovative time-of-use tariffs? Are there any barriers to their introduction that need to be addressed?</i>
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We have no comment to make on this question.

Q13	<i>Are there changes to settlement arrangements in the electricity or gas sectors that are needed to realise the benefits of smart metering?</i>
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We have no comment to make on this question.

Q14	<i>What arrangements would need to be put in place to ensure that customers located</i>
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	<i>on independent networks have access to the same benefits of smart metering as all other customers?</i>
<p>The services provided by the DCC and the data and communications services that support the DCC should be capable of supporting the needs of customers located on independent networks.</p> <p>We have no comment on the regulatory and commercial arrangements that would be required to support access by independent networks. We will support whatever arrangements are put in place to achieve this.</p>	

Q15	<i>Are there any other industry processes that will be affected by smart metering and which the programme needs to take into account?</i>
<p>Although not a formal industry process, the deployment of smart metering will have an impact on the delivery of customer support. As the end-to-end support of smart meters now runs across a number of organisations including retailers and the DCC, there need to be a common definition of how incidents and information about incidents are passed between participants. This will enable customer support surrounding smart metering to be a seamless process.</p> <p>Similarly, new end to end security processes need to be implemented across all industry participants to ensure the integrity of the smart metering programme. The nature of these processes will need to be defined once end to end risk assessments have been carried out, but given the integrated nature of the new business processes, it is certain that the end to end security processes will require co-operation and collaboration across the industry.</p>	

2.9 Rollout Strategy

Q1	<i>Do you believe that the proposed approach provides the right balance between supplier certainty and flexibility to ensure the successful rollout of smart meters? If not, how should this balance be addressed?</i>
Addressed in September response.	
Q2	<i>Would the same approach be appropriate for the non-domestic sector as for the domestic sector?</i>
Addressed in September response.	
Q3	<i>Is there a case for special arrangements for smaller suppliers?</i>
Addressed in September response.	
Q4	<i>What is the best way to promote consumer engagement in smart metering? As part of broader efforts, do you believe that a national awareness campaign should be established for smart metering? If so, what do you believe should be its scope and what would be the best way to deliver it?</i>
Addressed in September response.	
Q5	<i>How should a code of practice on providing customer information and support be developed and what mechanisms should be in place for updating it over time?</i>
Addressed in September response.	
Q6	<i>Do you agree with the proposed obligation on suppliers to take all reasonable steps to install smart meters for their customers? How should a completed installation be defined?</i>

Addressed in September response.	
Q7	<i>Do you think that there is a need for interim targets and, if so, at what frequency should they be set?</i>
Addressed in September response.	
Q8	<i>Do you have any views on the form these targets should take and whether they should apply to all suppliers?</i>
Addressed in September response.	
Q9	<i>What rate of installation of smart meters is achievable and what implications would this have?</i>
Addressed in September response.	
Q10	<i>Do you have any evidence to show that there are benefits or challenges in prioritising particular consumer groups or meter types?</i>
Addressed in September response.	
Q11	<i>Do you agree with our proposed approach to requiring suppliers to report on progress with the smart meter rollout? What information should suppliers be obliged to report and how frequently?</i>
Addressed in September response.	
Q12	<i>Do you agree that there is already adequate protection in place dealing with onsite security or are there specific aspects that are not adequately addressed?</i>
Addressed in September response.	
Q13	<i>Do you agree with our proposal to require suppliers to develop a code of practice around the installation process? Are there any other aspects that should be included in this code of practice?</i>
Addressed in September response.	

2.10 Statement of Design Requirements

Q1	<i>Should the HAN hardware be exchangeable without the need to exchange the meter?</i>
Addressed in September response.	
Q2	<i>Are suitable HAN technologies available that meet the functional requirements?</i>
Addressed in September response.	
Q3	<i>How can the costs of switching between different mobile networks be minimised particularly in relation to the use of SIM cards and avoiding the need change out SIMs?</i>
Addressed in September response.	
Q4	<i>Do you believe that the Catalogue is complete and at the required level of detail to develop the technical specification?</i>
Addressed in September response.	
Q5	<i>Do you agree that the additional functionalities beyond the high-level list of</i>

	<i>functional requirements are justified on a cost benefit basis?</i>
Q6	<i>Is there additional or new evidence that should cause those functional requirements that have been included or omitted to be further considered?</i>
Addressed in September response.	
Q7	<i>Do you agree that the proposed approach to developing technical specifications will deliver the necessary technical certainty and interoperability?</i>
Addressed in September response.	
Q8	<i>Do you agree it is necessary for the programme to facilitate and provide leadership through the specification development process? Is there a need for an obligation on suppliers to co-operate with this process?</i>
Addressed in September response.	
Q9	<i>Are there any particular technical issues (e.g. associated with the HAN) that could add delay to the timescales?</i>
Addressed in September response.	
Q10	<i>Are there steps that could be taken which would enable the functional requirements and technical specifications to be agreed more quickly than the plan currently assumes?</i>
Addressed in September response.	