

TOWARDS A SMARTER FUTURE: GOVERNMENT RESPONSE TO THE CONSULTATION ON ELECTRICITY AND GAS SMART METERING

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Executive Summary

Overview

Smart meters will pave the way for a transformation in the way that energy is supplied and consumed, contributing to our goals of energy security and carbon reduction. They will provide energy consumers with real-time information about their energy use, enabling them to monitor and reduce their energy consumption and carbon emissions. Smart meters will support improved energy efficiency advice and facilitate smoother, faster switching between suppliers. And they are an important step towards the future development of a smarter grid delivering improved network efficiency and responsiveness, which will in turn help facilitate the introduction and increased use of renewable energy and ultra low carbon vehicles (electric and plug-in hybrids).

In October 2008 the Government announced its intention to mandate a roll out of electricity and gas smart meters to all homes in Great Britain with the aim of completing the roll out by the end 2020. The Government published a ‘Consultation on Smart Metering for Electricity and Gas’¹ on 11 May 2009. This Consultation was aimed at confirming the shape and high-level requirements for the domestic roll-out. It also set out proposals to mandate a smart/advanced meter roll out for small and medium non-domestic sites. The Consultation closed on 3 August 2009.

This Response Document sets out the Government’s conclusions and decisions following that Consultation. In particular the document sets out the Governments conclusions on:-

- the delivery model for domestic smart meters (Section 2);
- the high-level smart functionality requirements for domestic electricity and gas meters (Section 3);
- the provision of a real-time display and information with a smart meter (Section 3); and
- the approach on smart functionality requirements for non-domestic meters (Section 4).

These decisions will provide the necessary platform for the detailed Implementation Programme work which will be needed to prepare the way for the start of the mass roll out of smart meters.

Over 270 responses were received to the Consultation covering a very wide range of issues. Each section of this Response Document gives a high level summary of respondents’ responses on the relevant aspects of the Consultation, and then explains the Government’s conclusions. The Government’s conclusions are summarised below.

Proposals for the Domestic Sector - Delivery Model

The Government has concluded that the Central Communications Model, under which energy suppliers will be responsible for purchasing and installing meters, and communications are co-ordinated centrally offers the best model for Britain’s smart meter roll out. In particular, the Central Communications Model combines strong incentives for energy suppliers to deliver a high quality service to their customers, with wide scope to simplify and improve industry processes,

¹ All further references to ‘Consultation Document’ refer to the Government’s ‘Consultation on Smart Metering for Electricity and Gas’ published on 11 May 2009

making it easier to switch between suppliers. This model is expected to minimise the time and risk involved in preparing for roll out, in particular since it avoids changing the disposition of responsibility for metering services.

The Government believes that the development of smart grids can be fostered effectively under this approach, in particular by ensuring the requirements of network business are reflected appropriately in the minimum meter specification and the communications solution. The Government believes that this approach is also likely to result in a smart metering roll out which is more responsive to customers overall, in particular because the provision of smart meters and related services will be an important part of the supply companies' relationship with their customers.

The Government also believes that strong positive engagement among local communities will be particularly powerful in generating the necessary awareness, enthusiasm and take up. This underlines the value of managing the roll out, so that as many people as possible in local communities receive their new meters at the same time. The Government therefore intends to develop measures to promote co-ordination of deployment at local level. As part of the Implementation Programme we will therefore assess the optimal approach to an area by area deployment further. An important aspect of this work will be to consider linkages to the development of a smarter grid and measures to tackle fuel poverty. The full range of stakeholders will need to be involved in this work as it is taken forward, including consumer groups, Local Authorities, the Energy Savings Trust, suppliers and network companies.

Proposals for the Domestic Sector - Functionality

The Government confirms the proposals it set out in the Consultation Document on high-level smart meter functionality requirements, with the exception of functionality to remotely enable/disable gas supply. The Government considers that further work is needed to assess some of the issues raised before a final decision is taken on this element of the gas smart metering system.

The Government considers the detailed proposals made by some respondents on smart grid functionality to be a subset of the requirements it set out in the Consultation and therefore has not made any additions to its original proposals for the electricity smart metering system in response to these.

The Government notes the comments received relating to the security and safety of the smart metering system as well as the need for appropriate consumer protections particularly relating to switching between credit and pre-pay and the possibility of remote disablement of energy supply. Ensuring security of the smart metering system, safety and protection of consumers will be at the heart of the Implementation Programme and also in particular, the work on functionality.

The Smart Metering Implementation Programme will develop the agreed list of high level requirements into more detailed functional requirements. This work will examine the more detailed functionality issues raised in Consultation Responses and smart grid functionality in particular. It will also take into account the independent analysis on the gas valve once that is complete. There will also be close links with the work on communications infrastructure requirements. Cost-benefit considerations will be an important part of this work.

The Government's position remains that a standalone display should be provided with the smart meter. In our view the provision of a display is important to securing the consumer benefits of smart metering, delivering real time information to consumers on their energy consumption in a readily accessible form. The next step will be to develop the requirements in more detail. As part of this work we will consider further what specific requirements should apply in cases where it is clear that the individual consumer does not wish to have a free-standing display. However it will be important that this does not detract from the general premise that a free standing display should be provided with the meter. This work will include the minimum common information which should be provided to all consumers.

Proposals for the Non-Domestic Sector

In light of the Consultation, the Government is adjusting its proposals in this area. The Government confirms its intention to mandate the installation of meters with smart functionality at non-domestic sites covered by the Consultation² on the same timescale as for domestic sites, with exceptions under certain circumstances. However, under the Government's revised proposals, the exceptions will be much more limited in respect of meters installed after April 2014.

The Government therefore proposes to require that electricity and gas meters at sites in this category must have smart functionality by the end of 2020 except:

- a) where advanced meters have been installed before April 2014 and the customer wishes to retain the existing meters; or
- b) where advanced meters have been installed after April 2014 under pre-existing contractual arrangements; or
- c) where there are technical constraints on the achievement of smart functionality.

The Government considers that this approach will best balance the need to support future smart grids by maximising installation of smart functionality with the desirability of allowing energy and carbon savings from advanced installations to continue in the short- to medium-term. However, the Government recognises that exceptions will need to be carefully framed, taking into account the technical and commercial complexities. We will discuss these revised proposals with suppliers, purchasers, meter and energy service providers and other stakeholders to refine the details before consulting on more detailed proposals.

The Government has concluded that, given the substantial differences between the domestic and non-domestic markets, we will not require meters for non-domestic customers to include functionality to support remote enabling and disabling of gas supply.

In recognition of the different needs of the wide range of customers and premises in the non-domestic sector, the Government does not intend to require a real-time display device to be provided to electricity or gas consumers in this sector. As part of further preparatory work on the roll-out of smart meters, we will consider what data should be made available to these customers, and what requirements should be placed on licensees to provide such data.

² The Consultation Document defined the relevant sites as those in electricity profile classes 3 and 4 and non-domestic gas sites with consumption of less than 732 MWh per annum.

The Implementation Programme will undertake further work on a variety of issues relating to the establishment of the central communications model in the domestic sector, as well as communications issues more widely. As part of this work, in consultation with interested parties, we will look further at the arguments for and against use of central communications to support meters in the non-domestic sector, and at how market arrangements and rules should be developed to support the development of smart grid capability.

Other Issues

Section 5 of this document summarises responses made to Consultation question 23 (other issues) and issues not raised in response to any specific Consultation question. Respondents raised a wide range of issues in connection with smart metering. These responses have helped to further and shape our understanding of the full range of issues that will need to be addressed as part of the Smart Metering Implementation Programme.

Most of the issues raised – for instance security, data protection, the regulatory approach, scope issues - will need to be considered further and in more detail in the Implementation Programme. In this response document therefore, the Government limits its comments to a number of points including consumer cost/benefit issues; consumer protections; change of supplier process; data protection, data access and security issues; meter recertification, stranding and early movers.

Programme & Next Steps

The implementation of smart metering will be the largest and most complex change-over programme in the energy industry for decades. It will have a profound impact on the services that consumers receive from energy companies, as well as on vital 'behind the scenes' activities such as settlement and network management.

Decisions set out in this Response Document provide the platform to launch the major programme of implementation work that will be needed to ensure that the Government's goal of a full roll-out of smart meters by the end of 2020 is successfully achieved. The central Smart Meter Implementation Programme will design and implement new cross-industry arrangements, in co-ordination with the change programmes which industry participants will need to implement themselves. This Implementation Programme will touch all parts of the energy industry and careful design and planning are needed to maximise the benefits to consumers and industry, while driving down on the costs of installing and operating the new smart meters.

The Programme will be managed according to rigorous programme management principles and reviewed under Office of Government Commerce Gateway procedures. The first phase of the Smart Metering Programme will be a joint DECC/Ofgem initiative. DECC will chair an overarching DECC/Ofgem Strategic Programme Board. This Board will provide the necessary strategic oversight and direction to the Programme. Ofgem E-Serve will manage and ensure effective delivery of phase one of the Programme on behalf of DECC.

The Government firmly agrees with those respondents who have emphasised that the Programme must effectively engage the full range of stakeholders. In particular, a focus on the consumer's perspective must be at the heart of decision making at each stage under the programme; as well as the views of industry participants who will take on responsibility for delivery following changes to the regulatory framework. The Programme will therefore develop a range of mechanisms to ensure that stakeholders' views are actively sought and fully taken into

account. More detail on the Smart Meter Implementation Programme is set out in Section 6 of this Response Document.

Section 1 Introduction

Smart metering will play an important role in our transition to a low carbon economy. It will pave the way for a transformation in the way that energy is supplied and consumed, contributing to our twin goals of energy security and carbon reduction. Smart meters will provide consumers with better information about their energy use enabling them to monitor and reduce their energy consumption and carbon emissions. They will mean an end to estimated bills and waiting at home for visits by meter-readers. They will facilitate quicker and smoother switching between suppliers and introducing more choice for consumers in energy tariffs. The consumption data from smart meters will help network operators to make better informed investment decisions and help consumers to gain access to better informed energy efficiency advice. And smart meters are an important step towards the future development of a smarter grid delivering improved network efficiency and responsiveness. In turn this will provide a platform for the major expansion we want to see in the use of new and renewable energy sources and increased use of ultra low carbon vehicles (electric and plug-in hybrids). So smart meters will help to drive up service to customers, drive down costs and cut carbon, helping us to meet the strategic challenge of the changing nature of energy generation and use.

In October 2008 the Government announced its intention to mandate the provision of electricity and gas smart meters to all residential energy consumers in Great Britain with the aim of completing roll out by end 2020. The Government published its 'Consultation on Smart Metering Electricity and Gas' on 11 May 2009 to inform decisions on that roll out. The Consultation Document covered a range of issues fundamental to the future framework for domestic smart metering. It also set out proposals to mandate a smart/advanced meter roll out for small and medium non-domestic sites. The Consultation closed on 3 August 2009.

Over 270 separate responses to this Consultation Document were submitted by a range of organisations and individuals. These provided different perspectives, views and information on specific questions set out in the consultation document and on a wide range of other issues. Overall there was a very broad expression of support for the Government's decision to roll out smart meters, and of the range of benefits the Government identified for the Programme. The Government is very grateful for the views and evidence submitted. The publication of this Response and the decisions it sets out are an important step forward. These decisions will now provide the platform for the major programme of work to prepare for the start of the mass roll out.

About this Government Response Document

This response document is divided up into sections with a high level summary of responses covering each question from the Consultation Document followed by the Government's response at the end of each section.

Alongside this response document we have also published the following associated documents:-

- a revised Impact Assessment for the roll out of smart meters to the domestic sector;
- a revised Impact Assessment for the roll out of smart meters and advanced meters to SMEs and public sector sites; and

- a report from Baringa Partners ‘Energy Network Business Market Model Definition & Evaluation Project’. This sets out Baringa Partners’ assessment of three further deliver models which give network businesses a greater role.

Next Steps

The Consultation responses have demonstrated broad support for the Government’s decision to mandate the rollout of smart metering. There is also a clear message, in particular from industry stakeholders, that we now need to move forward quickly towards implementation of a smart metering roll out. However, there are also a range of concerns about the associated costs, risks and complexities. It is widely recognised that the roll-out of smart metering in Great Britain will represent the largest and most complex such deployment anywhere in the world. We need to ensure the roll-out is implemented in a way which minimises cost and risk, promotes competition and innovation, and delivers the maximum benefits. It is essential that the consumer’s interests are kept at the heart of decisions on a wide range of implementation issues.

To realise all the benefits fully, the roll-out of smart meters will need to be effectively designed, planned and co-ordinated at every stage. A major programme of work therefore needs to be taken forward under an Implementation Programme before the mass roll out of smart meters begins. More details on the Implementation Programme can be found at Section 6 of this document.

Section 2: Proposals for the Domestic Sector - Delivery Model

Introduction

This section of the Consultation Document discussed the market arrangements for delivering smart meters to domestic consumers, and other matters including local coordination of deployment and wider policy considerations which might bear on the order of the roll out. Around 50% of respondents specifically addressed some or all of the questions on delivery model; around 40% addressed the questions on local deployment/prioritisation issues.

Summary of Responses

Consultation Question

1.	Do you have any comments on the Government's preference for the Central Communications model?
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The Central Communications Model was supported by a wide range of organisations and by more respondents than any of the alternative models. Those in favour typically felt that this approach would provide benefits in terms of efficiency, competition, interoperability and a platform for the development of smart grids. Respondents suggested that maintaining supplier-led competitive delivery for meters and meter installation would incentivise efficiency. Others suggested that minimising industry change would enable roll out to begin more quickly. Centralising communications reduced the need for interoperability rules and supported industry simplification and faster, smoother switching between suppliers. A number of respondents commented that existing industry roles such as data collectors or meter operators should be maintained or that the central communications provider should be licensed. Some respondents suggested that commercial interoperability arrangements would be necessary under this model.

A number of respondents including water and telecare providers suggested the communications system should be designed to allow third party use of these services on a commercial basis. A number of respondents commented that more detail was needed about how the central communications would work in practice. A range of views was expressed as to how the central communications model should be set up and on the range of activities it should cover.

The most common criticism of the central communications model was the argument that it did not facilitate a street by street roll out. Some respondents were concerned that a supplier led roll out would lead to two visits per house for a proportion of customers. A consultant was concerned that smaller suppliers (particularly single fuel suppliers) might have difficulty accessing metering services at a similar cost to larger players. Some smaller suppliers were concerned that the central communications service could have a high transactional cost for lower levels of use. Others were concerned that adoption of central communications could undermine competition in the non-domestic market. Some respondents argued that metering competition had not delivered significant benefits in the domestic market. A number of respondents expressed concerns about suppliers delivering meters to customers, concerns about suppliers 'cherry-picking' customers or questioned whether they were best placed to engage consumers. One

respondent proposed a ban on sales activity alongside installations. Another respondent commented that the new build arrangements should continue so that connections providers would also provide smart meters from the commencement of roll out.

A number of respondents argued against central coordination of communications. Arguments put forward in favour of a Competitive Model included that competition would help to drive down costs, increase innovation, improve service to customers and that it would allow an earlier start date for the roll out. Some small suppliers suggested that full competition allowed smaller suppliers to differentiate their service offerings and requested exemptions from a centralised communications provider if that model were chosen. A number of respondents suggested that communications was a fast-moving innovative area so unsuitable for monopoly provision.

Those specifically arguing against a fully competitive model typically felt it would add further complexity to an already complex market; and interoperability would be difficult to achieve. The Energy Network Association (and members) felt the absence of centralised communications meant this model would not provide a platform for smart grids.

A small number of responses expressed a clear preference for the Fully Centralised Model. Those in favour of it argued it would deliver an efficient (least cost), effective, coordinated (local / street by street) roll out which would aid consumer engagement. One respondent argued that this model would help avoid overlapping workforces and the duplication of administration and logistics operations.

National Grid suggested a variant model in which a national organisation would be established to provide and install meters and their communications. One respondent suggested a 'hybrid' approach that provided for networks to continue to own meters and new meter owners to own meters under an agreed Meter Framework Agreement with a 'rate card' approach to charging. A licence obligation would be placed on suppliers to use signatories to the rate card agreement. One respondent discussed benefits of a roll out by current asset owners and another suggested meter owners should also have the right to change their meters.

A number of respondents argued in favour of models in which networks had a greater role in meter provision and/or installation. These comments are summarised under question 6.

Some respondents commented more on outcomes than particular market models, for instance that local deployment was important for publicity efforts and community engagement. Quality of customer service was key. The Local Government Association argued that roll out should be coordinated with Local Authority strategies.

Consultation Question

2.	Do you have any comments on the analysis and conclusions on the market model contained in this Consultation Document, the reports prepared by Baringa Partners, or the Consultation Impact Assessment?
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The most frequent challenge to the Impact Assessment was on the cost assumptions applied to the Fully Competitive Model in the Impact Assessment (IA). A number of respondents challenged various assumptions underpinning the Fully Competitive Model including: the higher obsolescence rates and optimism bias on communications; and the need for two WAN and real

time display devices for all customers whose electricity and gas is supplied by two suppliers. They suggested that these costs could be overcome by standards and market rules and so should be removed from the IA. Some commented the model was very sensitive to different assumptions or that there was not a clear-cut case in favour of the Central Communications model.

A number of respondents commented on the communications costs with a small number of respondents suggesting that the costs set out in the IA should be higher. Others commented that it was difficult to estimate the communications costs when the communications technology and communications requirements had not been firmly established. A number of respondents suggested that the report by Baringa Partners on risk and optimism bias was based primarily on ex ante studies and therefore the optimism bias in the IA should not have been reduced. Others proposed amendments (increases and decreases) to individual elements of the optimism bias.

There was more limited comment (some of which was conflicting) on a range of other areas including: the counterfactual assumptions; efficiency of street by street roll outs; installation costs; cost of capital in network led models; dual fuel efficiencies; speed of roll out and start times (ie. that models would take longer or shorter to set up); IT costs; governance costs; smart grid benefits; impacts on smaller suppliers (covered under Q1 above); arguments that the analysis should give greater weighting to consumer risks and experience; the number of dual fuel installs and lower meter costs.

Consultation Question

3. Do you agree the Central Communications model effectively facilitates 'end to end' management of the electricity networks system needed for smart grids?

There was a high level of agreement that the central communications model would facilitate the development of smart grids if the communications solution and meter specification was appropriately designed. The electricity network businesses commented that they would therefore need to be involved in the specification of the communications and the meters. A number of respondents suggested that the networks' communications needs for smart grid were different to those of the suppliers; network businesses needed aggregated real-time data to allow 'smart' network management and this could have cost implications.

Some respondents said it was difficult to comment as smart grids were not yet fully defined. A number of respondents commented that smart grids involved more than just the communications between meter and network business so smart meters and their related communications did not by themselves provide 'end to end' management for smart grids. For instance, smart grids would also require real time control of devices in the home. Some respondents expressed their concern that a desire to develop smart grids might delay progress with the smart meter roll out or add cost.

Consultation Question

4. Do you consider that Government should adopt measures to promote co-ordination of roll-out at local level? If so, what measures would you support?

Overall, a majority of respondents responding to this question agreed that local co-ordination would be desirable or essential to help with awareness raising and other engagement at community level, and supported some form of measures to achieve this. A number of consumer, environmental and local government/housing organisations expressed such views. However, some respondents were opposed on the grounds that the complexity and cost of coordinating a supplier-led rollout would outweigh the benefits. Little information was provided on proposed measures or the appropriate geographical scale for co-ordination, with some favouring street-by-street and some favouring a larger scale of operation. A number of respondents suggested that local co-ordination would help to build up the density of installation more quickly necessary to deliver network and smart grid benefits.

Many responses highlighted the importance of national and local customer communications and engagement, to ensure that consumers are well prepared for the rollout. Such an activity would act as the “public face” of the programme, with activities to raise awareness, create consumer demand and thereby promote competition, and provide direct support for consumers.

Many of those in favour of a locally co-ordinated roll-out programme saw a public sector body developing the roll-out schedule. This would also allow some targeting of priority groups. Several respondents said that the roll-out should learn from area-based schemes (such as Warm Front and the Community Energy Saving Programme) and dovetail with the Heat and Energy Saving strategy (HES).

One large energy supplier supported measures to promote local co-ordination under the central communications model. However, the other large energy suppliers and the Energy Retail Association (ERA) had concerns that mandated local co-ordination would reduce the efficiency and increase the cost of a supplier-led roll out. Some respondents noted that area by area deployment can be, at best, only partial – a significant proportion of installations would not be part of local deployment as scattered installations will need to take place e.g. because a meter comes to the end of its life.

The Energy Retail Association suggested that a requirement on suppliers to publicise their geographical rollout programmes could lead to a degree of co-ordination on the ground. One large supplier argued that co-ordination would only work where the supplier had an adequate density of customers. Two small suppliers said that they should be excluded from any centralised mechanism, and had concerns about a competitive disadvantage due to costs arising from Government support for, or mandation of, local co-ordination activities.

A number of responses noted the link to communications decisions. For instance, if mesh radio or power line carrier (PLC) were chosen for the last mile, installing this would fit with, and might require, a degree of local coordination. A communications provider said that imposing a local co-ordination programme would help the communications service provider organise building their network and e.g. installing repeaters; one large energy supplier acknowledged that local co-ordination may be necessary in blocks of flats. The Energy Networks Association suggested that local co-ordination would help ensure efficient provision of network operators’ duties associated with installation.

Consultation Question

5. **Should any particular policy considerations be taken into account in considering whether there should be any priority target groups for early deployment of smart meters?**

Responses proposed a range of possible considerations for early deployment. These included: reducing financial/social disadvantage, carbon saving, ensuring that the programme is successful by prioritising those likely to be receptive to it, and integration with other programmes.

Overall, the respondents were balanced between those in favour of some customer prioritisation, and those who felt it was best left to suppliers to manage as part of a supplier-led rollout. The Energy Retail Association took the latter position, as did many industry respondents, but also a number from other groups (including academics, consultants and some members of the public).

Those arguing against any prioritisation generally did so on the grounds that this would add complexity and reduce the speed and cost effectiveness of rollout, and would also conflict with any geographical co-ordination. It was also argued that any prioritisation would inevitably involve de-prioritising other groups.

A number of respondents, including a number of consumer, local government and housing bodies, suggested prioritising the fuel poor, vulnerable groups and pre-payment meter (PPM) customers. The Local Government Association argued that such groups already have the lowest energy consumption and that there are dangers in associating smart metering with fuel poverty. A few respondents argued for PPM customers to be prioritised to eliminate differential charging, although one other respondent suggested that they were less likely to be able to make savings.

It was suggested that there was scope to prioritise areas with high proportions of fuel poor, PPM or vulnerable customers, rather than the individuals themselves. One respondent argued that the vulnerable should be prioritised in terms of support, but not order of rollout. Several respondents argued for a flexible approach that would not create inefficiency. One suggestion was that certain groups should have “no worse than” priority in the rollout than other groups. This included more expensive to serve groups such as rural, single fuel consumers. Government should monitor the delivery of the programme in relation to different types of consumers.

Amongst those that responded to this question, there was quite widespread support for prioritising different types of users who were more likely to take advantage of smart metering services or make larger savings, and who might act as cheerleaders for the roll-out programme. A number of respondents said that customer requests / the “willing to act”/ early adopters of smart metering services such as energy or load management systems should be prioritised, e.g. by requiring installation within a set time limit. Several respondents extended this to communities, saying that “low carbon communities” should be prioritised, which could also act as a demonstration for smart grids.

Other suggestions for prioritisation included: customers installing (or likely to install) micro-generation; those applying for Feed In Tariffs and/or the Renewable Heat Incentive; those purchasing ultra low carbon vehicles (electric and plug-in hybrids); individuals or communities with high energy consumption; and SMEs. Several respondents suggested that selected areas

and customer types should be prioritised for piloting, to help understand the benefits of smart metering early on. These included the disabled (including the blind) so that accessibility and usability issues are identified early on.

Consultation Question

6. Do you have any comments on the merits of alternative approaches to delivery under which electricity and gas network businesses take on responsibility for aspects of smart metering?

A number of respondents favoured a model in which networks were given the responsibility for providing and installing smart meters. Those in favour typically suggested that it would deliver an efficient (least cost), effective, co-ordinated (local / street by street) roll out, a single visit to every household and higher levels of consumer engagement as publicity could be co-ordinated by area. It would provide a uniform level playing field on which suppliers could compete. Some network businesses suggested a network led deployment could help with early delivery of smart grid benefits by achieving density more quickly in local areas. Some respondents noted that a network-led approach had been most commonly adopted in other countries.

A small number of respondents suggested the networks should also provide the communications for smart meters, although one respondent argued the communications should be provided by a specialist communications provider. A number of responses also commented that the networks would need to undertake upgrade work (eg. semi-concealed gas meters) before installation could take place. Some respondents suggested this could be better coordinated under a network model. A small number of respondents commented on the value of the gas emergency service provided by the gas distribution network companies.

Some respondents suggested that re-regulation would bring certainty for investors and therefore potentially a lower cost of capital compared to a supplier led roll out. A number of respondents commented that network responsibility for meter provision and installation would result in greater industry simplification as the meter owner would stay the same even when customers switched. A small number of respondents proposed that meter provision only (and not installation) should be re-regulated for this reason.

Others argued against giving networks a greater roll in either meter provision or installation activities. These respondents typically suggested that removing competition would be a retrograde step resulting in less efficient and higher cost outcome; that re-regulation of metering provision would take time and might require transfers of staff under TUPE arrangements; and there was a risk of legal challenge which would add further delay. Some respondents commented that the need to replace meters at the end of their lives would reduce the number of meters installed under an area-based roll-out. Any targeting of certain customer groups would further cut across the local deployment.

Government Response

The Government has concluded that the Central Communications model should be adopted as the delivery model for domestic smart meters.

The Consultation Document invited views on alternative delivery models which were analysed in depth in an accompanying option appraisal prepared by Baringa Partners. The three models were:-

- A Competitive Model – this option is based on the existing metering market model. Under this model suppliers would remain responsible for all metering services including communications to and from meters;
- A Central Communications model - this option would introduce a new central function to implement and manage communication infrastructure and data carriage, whilst maintaining metering competition. The communications provider would be organised on a national basis. All suppliers would be obliged to use the central communication function via licence conditions. Suppliers would remain responsible for all other metering services;
- A Fully Centralised model – this option would introduce regional franchises to manage meter asset selection, ownership, deployment and maintenance, via a time-based competitive franchise or licence awarded under competition. Communications services would be managed centrally as under the previous option.

The Consultation Document indicated a preference for the Central Communications Model, subject to responses to the Consultation.

In addition, Section 2.2.1 of the Consultation Document explained the Government's intention to carry out further work during the consultation period to look at the possibility of the electricity and gas network businesses assuming greater responsibilities in relation to smart metering roll out than was envisaged in the three delivery models covered by the May 2009 Baringa report. In support of this work, the Government commissioned an options appraisal from Baringa Partners. Written comments were requested from a range of stakeholders as to how an approach involving network operators might operate. Two stakeholder workshops were organised to contribute to the analysis of alternative network based approaches. The first workshop focused on how (an) approach(es) involving more responsibilities for the network businesses might operate. The second workshop was arranged to contribute to the analysis of the models defined.

Baringa's final report on alternative network-led models is published alongside this Consultation Document³. It sets out a further three alternative approaches for delivery of domestic smart meters. These are:-

- A 'Regulated Asset Ownership Model' in which electricity distribution network operators (DNOs) own and provide smart electricity meters and gas transporter businesses (GTs) provide smart gas meters; installation and decisions on deployment strategy are the responsibility of suppliers;

³ Footnote to website

- An 'Energy Networks Coordination Model' in which DNOs and GTs own smart electricity and gas meters respectively and coordinate to decide the deployment strategy and install these;
- A 'DNO-Deployment Model' in which DNOs and GTs own smart electricity and gas meters respectively, but DNOs decide the deployment strategy and install both electricity and gas meters.

The appraisal by Baringa Partners evaluates these models using the same evaluation criteria as in its May 2009 report, which were both quantitative and qualitative. Particular attention was paid to assessing whether any model was better able to deliver smart grid benefits. The Government's revised Impact Assessment is expanded to include these three further alternative models.

The Government has considered carefully the responses to the consultation and the analysis completed by Baringa Partners in reaching a decision on the delivery model for domestic smart meters. The Government has concluded that the Central Communications Model, under which energy suppliers will be responsible for purchasing and installing meters, and communications are coordinated centrally, offers the best model for Britain's smart meter roll out.

The Government confirms its view of the advantages of the Central Communications Model, and the relative advantage of this model over the Fully Competitive and Fully Centralised Models, as noted in the Consultation Document and accompanying analysis. In particular, the Central Communications Model combines strong incentives for energy suppliers to deliver a high quality service to their customers, with wide scope to simplify and improve industry processes, making it easier to switch between suppliers. This model is expected to minimise the time and risk involved in preparing for roll out, in particular since it avoids changing the disposition of responsibility for metering services. And this model will provide a basis for the future development of smart grids, although as under any model it will be essential that the energy network operators are fully engaged in the preparatory work and their interests are properly reflected in the design of the metering and communications systems.

The Government remains of the view that the Fully Centralised Model has serious drawbacks, in particular, the length of preparation time required; the degree of risk arising from the scale and complexity of the change programme it would require; and the lack of competitive pressures on metering services to ensure a high quality of customer service. The Government considers that similar concerns would apply to the national franchise approach suggested by National Grid.

The Government has noted that a number of respondents to the consultation consider that the issues leading to higher costs under the Fully Competitive Model could be overcome by market rules and standards. However, the Government remains of the view that the difficulties of establishing technical interoperability and a communications approach that served all industry and consumer interests without central communications are likely to be very significant; with consequent risks to key objectives and, in particular, ensuring efficient arrangements for customer switching and facilitating the development of smart energy networks.

Responses to the consultation and the detailed analysis we have undertaken indicate that options in which the network businesses have substantial delivery responsibilities are viable alternative models. Baringa Partners, in their report, conclude that the arguments for and against such approaches are finely balanced, and the assessment on quantitative grounds shows no clear cut winner. Consequently an assessment of the qualitative arguments is central to the choice of delivery model. As the Baringa report notes, "choosing between the different

models does require some level of trade-off between different criteria – for example the speed of commencing roll-out (a feature of the supplier-led models) in comparison to the simplicity of delivering interoperability (most straightforward in the network models).”

Baringa’s report summarises their view of the qualitative arguments as follows:

- there are advantages and disadvantages of each model in respect of consumer impact. The Central Communications Model and Regulated Asset Ownership Model both benefit from the supplier retaining the customer relationship. This may allow the supplier to combine the smart meter installation visit with other services, and to respond to customer requests. The DNO-deployment Model and Energy Networks Coordination Model may provide improved customer awareness since campaigns can be focused more easily in local areas prior to roll-out. The DNO-deployment Model, in particular, reduces the number of installation visits to one per customer, thus minimising disruption;
- the network business models reduce the amount of competition in metering, particularly in the case of the DNO-deployment Model and Energy Networks Coordination Model, where installation also becomes a regulated activity. Notwithstanding the potential detrimental effects on customers from less competitive meter provision and installation, these models do potentially simplify the mechanism by which commercial interoperability is achieved, as meters will be provided under standard regulated agreements;
- in general, the network business models may not offer the same opportunities to innovate by the supplier in terms of its customer offering around smart meters. Hence, the Central Communications Model has an advantage in this respect. The Regulated Asset Ownership Model can share some of these benefits since, unlike in the other two network business delivery models, installation and post-installation activities remain un-regulated activities. Arguably it is in these areas where there is greatest scope for service innovation;
- the governance and set-up considerations differ between the delivery models. The establishment of a central communications function is common to all models, but the network business models differ from the Central Communications Model in that they require the re-regulation of metering. Thus, there is a greater role for the regulator in these models, who has the challenge of setting a price control on a new activity where the asset and installation costs are uncertain. In addition, these models will include additional set-up costs within network businesses to establish new operations, processes and systems and the transfer of staff; and there may be a greater risk of legal challenge introduced, which could jeopardise the start of the roll-out;
- the potential for smart grid technologies to revolutionise the way that supply and demand are balanced and how the networks operate in the future, suggests that a greater role for network businesses in the deployment of smart meters, a key part of the smart grid solution, would be beneficial. A minority of stakeholders have suggested that ownership of the meter by the network businesses may provide greater control and confidence over the development of future smart grid requirements. However, Baringa’s view, supported by most stakeholders, is rather that the key enabler of smart grids will be the minimum specification of the metering technology (e.g. allowing import/export measurement) and ensuring that the communications are scalable to meet future requirements of smart grids;

- it is important that network businesses are represented in the process of defining the minimum meter specification and the central communications function, and this process will ensure the delivery of an environment in which smart grid benefits can be delivered. This process is delivery model independent.

The Government broadly accepts this analysis. The Government also agrees with the overall conclusion in Baringa Partners' report that the Central Communications Model should be adopted, so as to be able to start the mass roll out of smart meters as soon as possible, free of the risks and challenges involved in trying to re-regulate metering. The Government believes that the development of smart grids can be fostered effectively under this approach, in particular by ensuring the requirements of network business are reflected appropriately in the minimum meter specification and the communications solution. On balance the Government believes that this approach is also likely to result in a smart metering roll out which is more responsive to customers overall, in particular because the provision of smart meters and related services will be an important part of the supply companies' relationship with their customers.

The decision on the choice of delivery model is an important step forward giving certainty to the industry about the Government's high level approach to smart metering delivery. A considerable amount of further design work is now needed to establish how a Central Communications Model should best be delivered. This will be a significant piece of work under the Implementation Programme. The work on communications will need to cover a wide range of issues including regulatory, competition, commercial, technical issues, as well as develop the related market rules. An important first step will be to establish the overall communications requirements.

As noted in the Consultation Document, the way in which the deployment is run will crucially affect consumer engagement. The full benefits of smart meters will only be secured if consumers understand and exploit the new information and opportunities which they offer. The energy supply companies will in any case have a key role ensuring that new information and services which they provide with the new technology are responsive to customers' needs and wishes. Under our chosen delivery model, the smart meter installation visit can also be a landmark event in the energy supply company's relationship with their customers. It will be important for suppliers to ensure the experience is as positive and constructive as possible from the customer's perspective.

Equally, the Government also believes that strong positive engagement among local communities will be particularly powerful in generating the necessary awareness, enthusiasm and take up. This underlines the value of managing the roll out on an area by area basis, so that as many people as possible in local communities receive their new meters at the same time. The Government therefore intends to develop measures to promote co-ordination of deployment at local level.

As part of the Implementation Programme we will therefore assess the optimal approach to an area by area deployment further. This work will take account of inputs from energy suppliers and others, in relation to logistical efficiencies; and it will also give further consideration to other issues which might potentially be reflected in deployment priorities, including alignment with the Government's wider Heat and Energy Savings delivery strategy, early smart grid developments and fuel poverty objectives, as well as any potential deployment constraints emerging from the design work on communications solutions. The full range of stakeholders will need to be involved in this work as it is taken forward, including consumer groups, Local Authorities, the Energy Savings Trust, suppliers and network companies.

Impact assessment

The Government invited comments on the Consultation Impact Assessment on a domestic smart metering roll out which was published alongside the Consultation Document.

A number of respondents challenged the assumptions set out in the Consultation Impact Assessment on communications obsolescence and the number of WAN devices and real time displays that would be required under the Fully Competitive Model. With regards to the obsolescence assumptions, whilst we recognise rules may emerge to address the issues of churn and interoperability, optimism bias has been applied due to the uncertainty of the eventual outcome, and to ensure a conservative scenario is assessed. Similarly, as regards the number of display and WAN devices, whilst it is possible that rules could be devised to ensure a single display and WAN connection is provided to every house, stakeholder feedback as part of the workshops suggested there is a variety of views on whether this can be achieved in homes with different suppliers for electricity and gas. We have therefore not changed the assumptions currently employed within the IA.

Some respondents suggested that our optimism bias⁴ assumptions are based primarily on ex-ante studies and therefore the optimism bias should not have been reduced. Others proposed amendments to individual elements of the optimism bias. Whilst we recognise that the optimism bias assumptions used in the Consultation Impact Assessment are in part based on ex ante studies, we believe that this work provides a thorough analysis of the issues and therefore a reasonable basis for assumptions in the Consultation Impact Assessment on optimism bias. In addition, the responses to the consultation did not provide clear, verifiable data to contradict the assumptions we have made, hence no further adjustments to the optimism bias have been carried out.

We note the comments on the general communications costs assumptions. We recognise that there is still uncertainty around the final technological solutions that will be adopted for smart metering. Further work will be taken forward on the communications for smart metering during the first phase of the Programme.

Lastly, DECC has revised its assessment of the forecast levels of future energy and carbon prices and these have been applied in the Impact Assessment, substantially increasing the benefits from carbon savings.

⁴ See footnote 2

Section 3: Proposals for the Domestic Sector – Functionality

Introduction

This section of the Consultation Document covered the Government’s proposals for the high level functional requirements for the domestic smart metering system and on the provision of information to domestic consumers. Table 1 below sets out the high level smart electricity and gas meter system functionality requirements on which the Consultation Document sought views. Around 50% of responses specifically addressed the questions about meter functionality and around 50% of responses addressed issues around provision of information.

Table 1: Proposals for high level functionality set out in the Consultation Document

High level functionality	Electricity	Gas
A Remote provision of accurate reads/information for defined time periods - delivery of information to customers, suppliers and other designated market organisation	✓	✓
B Two way communications to the meter system - communications between the meter and energy supplier or other designated market organisation - upload and download data through a link to the wider area network, transfer data at defined periods, remote configuration and diagnostics, software and firmware changes	✓	✓
C Home area network based on open standards and protocols - provide “real time” information to an in-home display - enable other devices to link to the meter system	✓	✓
D Support for a range of time of use tariffs - multiple registers within the meter for billing purposes	✓	✓
E Load management capability to deliver demand side management - ability to remotely control electricity load for more sophisticated control of devices in the home	✓	
F Remote disablement and enablement of supply - that will support remote switching between credit and pre-pay	✓	✓
G Exported electricity measurement - Measure net export	✓	
H Capacity to communicate with a measurement device within a microgenerator - receive, store, communicate total generation for billing	✓	

Summary of Responses

Consultation Question

7. Do you agree with the functionality proposed for electricity meters? Please explain your reasons and if possible give evidence for your comments.

There was broad support for the high level functional requirements for the domestic electricity smart metering system set out in the Consultation Document (see table 1 above). A number of respondents commented that these represented a high level basis from which development of a more detailed functional specification should follow and some commented a clear process to achieve this should be established quickly. Some respondents raised particular questions about the clarity and meaning of some of the proposed high level functionality. In particular more clarity was needed around the functionality to deliver demand side management and around the intervals over which data should be provided. A range of comments were received about the detailed functionality to be provided under the high level requirements set out in the Consultation Document.

The inclusion of functionality to remotely disable and enable electricity supply was broadly supported. Larger suppliers outlined the benefits of this functionality including reduced pre-payment costs to serve; the development of improved pre-pay and pay-as-you-go tariffs; choice of payment methods; and better debt management. It would also remove the need to replace meters because of a change in payment method. Some respondents questioned whether remote disablement/enabling functionality was the only way to achieve these improvements. Some respondents supported this functionality as a way to equalise costs and service across credit and prepay customers; others were concerned that this functionality could be misused or presented a security risk. A number of respondents suggested that there would need to be a regulatory framework around the use of remote switching/disablement functionality; consumer protections, especially for the vulnerable, would be required.

A number of respondents considered that high level functional requirements should be explicit about the need for the metering system to be secure. Comments covered a range of issues including tamper-proofing the meters and associated communications in the home, protection of consumer data, access to and control of metering and communications. Appropriate security was required throughout the elements of the smart metering system.

A number of respondents stressed the need for open and non-proprietary protocols and standards to support smart metering communications (in particular in-home) in order to support innovation. Some concerns were expressed about the potential implications of standardisation work in Europe on smart metering and communications.

Consultation Question

8. Are there any additional requirements that will be needed to facilitate smarter network management, efficient energy management and the development of “smart grids”? Please provide analysis, particularly on costs and benefits, where possible.

A number of respondents suggested it was important for the high level requirements for the smart electricity system to include functionality to facilitate development of a “smart grid”. Some

respondents suggested specific detailed functionality to enable this. A small number of respondents were concerned about the additional cost of network functionality or that adding in further functionality requirements for smart grids would cause delay to a roll out of smart meters. Others commented that because smart grid had not yet been defined in detail it was difficult to provide comments.

The Energy Networks Association provided an outline of network requirements it had developed with its members. The additional functionalities (subject to cost benefit analysis) proposed by the Energy Networks Association in its response were supported by a number of individual network businesses and other respondents including suppliers and communications and technology providers. The network companies proposed that smart meters should have the capability to measure various aspects of electricity supply (including current profiles, voltage profiles, and voltage quality); for network operators to receive messages (for example to ascertain if electricity supply had gone off); and to receive consumption and other data. The Energy Networks Association suggested, on the basis of discussions with manufacturers, that the cost of including this functionality should be marginal. They suggested that this functionality required appropriate processing and memory capability in the metering system.

A number of respondents emphasised that the system would need to provide a certain level of granularity, reliability, accessibility, capacity and speed of communication for network operators to utilise data both in planning and potentially operational timescales. Some commented that the communications necessary to deliver non-time critical data and control (for example meter readings or tariff updates) was likely to be different from that required to manage the electricity network on a near real time basis for smart grids. Some respondents commented on the possible impact of network requirements on the overall cost benefit case and the communications solution. Some respondents emphasised the need to move towards a detailed consideration of the communications requirements alongside the development of the detailed functional specification.

Consultation Question

9. Do you agree with the functionality proposed for gas meters? Please explain your reasons and if possible give evidence for your comments.

There was general support for the high level functional requirements A-D outlined in table 1 above. Most respondents agreed that these requirements provided a starting point for development of a more detailed functional specification. As for electricity, some respondents called for the establishment of a process to deliver this.

Respondents' views were mixed on the proposal to include functionality to allow the remote disablement and enablement of gas supply to support switching between credit and pre-pay in all meters⁵. Some respondents argued that the cost of the valve included in the Consultation Impact Assessment (£13) was too high; others argued it was too low. A number of respondents noted that valves were already deployed in existing prepayment meters (about two million meters or around 10% total gas meter stock) and would continue to be required for prepayment

⁵ Explanatory Note: For gas meters the functionality to support remote disablement / enablement and switching between credit and prepay is a valve in the meter. The valve closes to disable supply and opens to enable the gas to flow again. References to the valve in the following paragraphs should therefore be read as shorthand for this functional requirement.

customers in the future, as standard pre-pay tariffs require a valve which closes when the pre-paid amount of gas had been used and opened when further credit was added.

Overall there was a markedly divided response on the issue, with some stakeholders strongly in favour and some strongly against making a valve a universal requirement for all meters. A range of arguments were put forward in favour of the proposition. A universal requirement would enable suppliers to offer common services for both gas and electricity.⁶ It removed the need to change meters when a customer chose to move from credit to pre-pay, avoiding these additional asset and installation costs. Take up of pay-as-you-go tariffs could be limited if meter changes were required and some major suppliers anticipated a significant take-up of these tariffs in the future. One consultant noted that the number of consumers on pay as you go had increased significantly in Ireland since the introduction of keypad meters. A number of respondents considered that, as for electricity, there was an opportunity to equalise costs and service between credit and pre-payment customers for both fuels. Major suppliers favoured this approach emphasising the benefits of reducing administration and back office costs and those associated with debt and credit risk management. It was also suggested that a universal requirement for a gas valve would help to simplify the process for procuring and managing meters by having common functionality in all meters. Concern was expressed by some that an approach where remote disablement was available for electricity, but not gas could risk debt being shifted from electricity to gas, and could confuse consumers. Consumer groups again emphasised the need for appropriate consumer protection.

Various arguments were put forward against a universal requirement for a gas valve. Those who did not support this approach typically felt it would maximise the stranding of legacy gas meters and thereby increase the costs of the smart meter roll out; costs would be higher because meters with valves cost more; and a large proportion of customers would never use the functionality. A number of the responses highlighted that the economic benefits from the inclusion of the valve fell to suppliers. It should therefore be for suppliers to decide whether to deploy meters with valves on the basis of their business cases.

A number of respondents were concerned about the safety of the remote operation of the valve, especially enablement of gas supply. If appliances remained on after the gas flow had stopped, when the gas supply was turned back on, unburned gas could flow into the property, which would be dangerous. The reliable operation of the valve was also questioned by a number of respondents who were concerned that the valve may not operate as designed, particularly after a period of dormancy.

A number of respondents suggested that smart meter capability could deliver benefits for the management of the gas distribution network; a valve may have some benefit for gas distributors to disable supply in the event of an emergency. The Energy Networks Association noted it had done some initial work to assess potential requirements for gas but its work was less advanced than for electricity networks.

As for electricity a number of respondents considered that the high level functional requirements needed to be explicit about the need for the metering system to be secure.

⁶ The high level requirements for electricity include this functionality

Consultation Question

10. Is there significant scope for retrofitting non-valve functionality to gas meters? What are the costs and how many meters are capable of being retrofitted?

A number of responses to this question suggested that a retrofit approach⁷ could deliver most of the high level functionality set out in the Consultation Document. Responses generally agreed that it was not possible to retrofit a valve. Responses suggested that a retrofit option could be viable for a proportion of existing gas meters. A number of respondents argued that the costs of retrofit device(s) were lower than the cost of a smart meter, installation would also be faster and require a less highly skilled workforce, further lowering costs. Some respondents considered that because meters which could be retrofitted tended to be newer, retrofitting rather than replacing these meters would reduce stranding costs.

Other responses highlighted potential problems with a retrofit approach and set out a range of points. A retrofit approach could lead to a more complex and confused installation, because it would not be clear – possibly until the day of installation – whether a meter could be retrofitted or not. A mixture of installer skills would be required because different meters could require a different retrofit device or devices making it more complex logistically to provide appropriate people and equipment and to track what had been installed and where. Some respondents raised questions about whether retrofitted devices were robust, for example to resist tampering or maintain accuracy.

Consultation Question

11. Are there any additional maintenance, administrative or management costs associated with having all gas smart meters with a valve?

A number of respondents considered that additional maintenance costs were likely to be incurred if all gas meters included a valve. It was argued that experience from the operation of prepayment meters suggested that meters with valves required more maintenance visits than credit meters. Some respondents noted it was difficult to disaggregate the reasons for maintenance visits to current prepayment meters because these covered a variety of issues including self disconnection, payment faults and meter faults.

A number of the major suppliers indicated that administrative and management costs could be increased if some meters had valves and others did not. These were related to the additional costs of having to support separate systems for prepay and credit.

Consultation Question

12. Do you agree with the Government's position that a stand-alone display should be provided with a smart meter?

⁷ adding a device or devices to an existing gas meter rather than replacing it

The majority of responses that commented on this issue supported the Government's position. Environmental and social NGOs, academics and Local Government interests all supported the mandatory provision of a display, as did a number of respondents from the energy and communications industries and individuals. The reasons given were generally that a separate display would give greater awareness, trigger behaviour changes, and so deliver the benefits sought. The universal provision of displays would also help "sell" smart metering to consumers.

Those who disagreed argued that a universal requirement was too prescriptive and could lead to wastage. A number of respondents argued that the requirement should be to make information available, rather than stipulating the communications channel. This would allow flexibility to use e.g. the Internet, mobile phones or TV sets as the means of providing information on energy use. It was also suggested that some consumers would be inclined not to use a free-standing display, even if provided, which would create waste. The need to take the energy consumption of the display itself into account was also noted. A few individual respondents also argued that the provision or not of a display or other information medium should be left to consumer choice.

Variants on the Government's position were also put forward. One large energy supplier proposed that a standard display should be made available on demand to all customers at first installation, but other information routes and higher levels of functionality should also be offered. One non-energy sector respondent suggested that displays should be the norm for most customers, but other options should be available.

The general view from energy suppliers and the Energy Retail Association was that were Government to introduce a universal requirement to provide displays, that this should be as flexible as possible (e.g. to allow desirable innovation, such as integrating gas feedback with heating controls, and support for variable tariffs), and potentially time-limited such until to 2015, or with a review of the requirement taking place in the early stages of the rollout. The need to take account of the emerging findings of the Energy Demand Reduction Project (EDRP) was also noted, both by energy suppliers and a few other respondents.

There were concerns, both from those favouring a universal display requirement and those opposed, that this could obstruct innovation if specified in the wrong way. A number of respondents argued against the mandatory provision of a basic standard display for all consumers because suppliers should be able to differentiate and offer displays with additional functions, perhaps at extra cost. Such additional services included appliance-level consumption information; predictive / feed forward software (to inform consumers about future expected consumption); targeting and benchmarking information; demand side management/load control information; historic profiles; reminders and alert messages; and other (e.g. weather, travel) information. Some suppliers said that responsibility for providing displays must rest with the supplier rather than central communications provider as this was an important point of competitive differentiation.

Some respondents commented that there was a limit to the amount of information which could be included on a freestanding display; some such information would be better communicated by other means. Therefore the display should not be seen as the only method of communication – written bills, the Internet, other forms of information and advice are also important in informing consumers about energy efficiency. A number of respondents said that the Government should require a standard interface (API) with an open communication protocol and common standards for the Home Area Network, so that a variety of displays could be supported and remotely upgraded with new software.

The need for advice and support for consumers so that they would be able to understand how to use the display information was stressed by a number of respondents.

Consultation Question

13. Do you have any comments on what sort of data should be provided to consumers as a minimum to help them best act to save energy (e.g. information on energy use, money, CO₂ etc)?

Respondents commenting on this issue generally accepted the need to set some minimum requirements on information provided to consumers. Overall, information on the cost of energy consumed tended to be seen as more relevant than details of energy consumption (kWh) or CO₂ emissions. Some respondents felt that only a minority of consumers would want to have information on CO₂. However many felt that all three of these data types should be accessible to consumers. Respondents generally saw both historic and real-time (instantaneous) data as necessary. Some respondents commented on the value of providing a wide range of options on data presentation, and allowing consumers to experiment.

Some comments were provided on the merits of analogue versus digital information; a number of respondents suggested that a significant proportion of the population have difficulty with reading figures, and the Energy Savings Trust cited recent focus group research which indicated that an analogue, speedometer-style display was most appropriate for the majority of consumers. Another point was that the factory default setting should be carefully chosen.

The Energy Retail Association referred to work on the data they would expect smart meters to be able to provide directly within the home, including instantaneous usage, register readings, tariff information and (in the case of debit/prepayment) credit balances. They proposed that these data would enable consumer information to be presented on actual and historic (hour, day, week, month and year) energy (kW or kWh), cost and CO₂, details and where relevant, credit balances.

A number of respondents argued that a degree of flexibility should be allowed, with a minimum level of specification but suppliers should be free to add additional and new services and information. One energy supplier proposed that the minimum data specification should be set for roll out only, with further development left to energy suppliers. Some respondents commented on the large potential for further development of useful services, such as appliance-specific information. One respondent said that electric heating would need separate presentation as it would otherwise swamp other electricity consumption.

A number of respondents suggested that there was value in adding additional information, to make displays more interesting and actively used. Suggestions included weather, external temperature and forecasts, messaging functionality, benchmark comparisons with similar users, forward predictions (for the user or their peer group), city information (e.g. on traffic etc). The Energy Networks Association suggested that provision should be made for including information on power cuts. Messaging might be essential for some future tariff options (e.g. advance notification of Critical Peak Pricing).

To help consumers control energy expenditure better, some suggested that consumers should be able to set targets for consumption, and receive visible or audible warnings when these are exceeded. Visual (e.g. red/amber/green light) alerts were also suggested for peak tariff periods.

A number of respondents suggested that those on PPM or Pay As You Go tariffs should be given details of credit remaining; debit customers could be given information on consumption since their last bill.

Another point made by several respondents was that simple visual displays would not be suitable for conveying all the information needed by consumers, for example historic consumption profiles, which may be better communicated via the Internet.

The importance of displays to supporting other, related energy developments such as micro-generation was raised by several respondents. It was argued that direct consumer feedback on distributed energy production, cost savings and suppliers to the Grid will be important to reinforce engagement. It was also suggested that displays to provide information on water consumption and saving in hot water consumption, if data was available.

Consultation Question

14. Do you have comments regarding the accessibility of meters/display units for particular consumers (e.g. vulnerable customers such as the disabled, partially sighted/blind)?

The use of large text displays, symbols, and speaking displays / audio messages were all suggested as potential means of making display data more accessible to vulnerable or disabled consumers. Some respondents also noted that these consumers will have the same general needs as other customers, e.g. for physical ease of access and simplicity of use.

A key point made by a range of respondents was that energy suppliers already have an obligation to take customer needs into account and to provide suitably tailored solutions, and must comply in any case with the Disability Discrimination Act. Other points were that it will be essential for older and disabled customers to be able to use displays; that speaking displays should be required for the blind/partially sighted; that the Internet will be a useful tool since it can provide solutions to data access; and that the market should be encouraged to provide appropriate displays, under a flexible standards, rather than specifications for the disabled being set centrally.

A number of respondents said that open standards are needed to ensure interoperability between different commercial solutions. One industry body suggested that meter suppliers will need the assistance of Government and non-Government experts, as they lack specific expertise in this area.

Government Response

Functionality

The responses to the consultation indicated wide support for the Government's proposals on high level smart metering functionality as set out in Table 1 above. The areas attracting a substantive degree of comment from respondents were in relation to smart grid functionality and the requirement for functionality to support remote enablement/disablement of gas (a valve).

The Government considers the detailed proposals made by some respondents on smart grid functionality to be a subset of the requirements it set out in the consultation and therefore has not made any additions to its original proposals for the electricity smart metering system in response to these (more explanation on this point is set out below).

The Government notes the strong and divided views of stakeholders in relation to the universal provision of a valve. Stakeholders raised a range of economic and technical issues in their responses. The Government considers that further work is needed to assess some of the technical issues raised in particular before a final decision on this element of the gas smart metering system is taken. This is discussed further below.

The Government therefore confirms the proposals A-H for electricity and A-D for gas set out in Table 1 above. The Government will take a final decision on the gas valve issue once the further assessment work is complete.

The Government notes the comments received relating to the security and safety of the smart metering system as well as the need for appropriate consumer protections particularly relating to switching between credit and pre-pay and the possibility of remote disablement of energy supply. Ensuring security of the smart metering system, safety and protection of consumers will be fundamental to the Implementation Programme and of the workstream on functionality in particular. Precise functionality requirements around security will be developed as part of the detailed functional specification. The Implementation Programme will examine the existing protections for consumers and amend these where appropriate to ensure that consumers remain properly protected. As Ofgem's consultation response highlights, this work will need to cover a variety of issues, but particularly rules relating to remote disconnection and switching between credit and pre-pay. Consumer groups will need to be fully engaged in this process.

Electricity Smart Grid Requirements

The consultation explicitly sought inputs to confirm that the Government's proposals for high level smart metering requirements adequately captured the network requirements for smart grid. As set out above, the Energy Networks Association and its members have undertaken work during the consultation period to investigate the smart metering functionality requirements of network businesses in relation to smart grids, as well as an initial assessment of costs.

The Government is grateful for the inputs provided by the Energy Networks Association and its members. We note that the work conducted by the Energy Networks Association is more detailed than the high level requirements set out in the consultation. The Government's assessment is that the network needs are broadly covered by the high level requirements set out in the Consultation Document. The next phase of work on functionality will establish a more detailed functional specification for smart metering under these high level requirements. The smart grid functionality work undertaken by the Energy Networks Association will be an important input to that process. Network businesses will need to input further as that

specification is developed. We note that a number of respondents suggest that communications needs for network businesses could be different to those of supply businesses. Network businesses will therefore also need to be involved in work to develop the specifications for the communications for smart meters so these issues can be fully considered. Cost benefit considerations will be an important part of both areas of work.

Gas Valves

The question of whether the minimum requirement for all gas meters should include a valve for remote enablement / disablement was commented upon by many respondents. In the Consultation Document the Government proposed inclusion of this functionality, on the basis that this would reduce meter replacement costs overall.

Arguments were submitted both for and against this proposal covering a range of economic and consumer issues. Many of these arguments are essentially based on a view of technical, operational and commercial matters. A range of respondents commented, for example on the maintenance and safety requirements involved where valves may be used after a long period of dormancy or when the gas supply is enabled remotely.

In view of the technical nature of the issues raised, and the range of detailed information submitted, the Government proposes to commission expert analysis to assess further the options, and their practical implications, before reaching a final decision. This work will review and consolidate the available information, including on costs and benefits, test the robustness of the arguments made in relation to the gas valve, and examine issues relating to retrofitting, technical capability, safety and maintenance requirements, and commercial operations. The Government's final decision will be informed by this analysis.

Electricity and gas functionality – next steps

The Smart Metering Implementation Programme will develop the list of high level requirements set out at table 1 above into more detailed functional requirements. This work will examine the more detailed functionality issues raised in consultation responses and smart grid functionality in particular. It will also take into account the independent analysis on the gas valve functionality once that is complete. There will also be close links with the work on communications requirements. Cost-benefit considerations will be an important part of this work.

Displays and Information

The Government's position remains that a standalone display should be provided with the smart meter. In our view the provision of a display is important to securing the consumer benefits of smart metering, delivering real time information to consumers on their energy consumption in a readily accessible form. Whilst the Government recognises that there are a variety of alternative means of information provision, there is much less evidence on their effectiveness. Indeed, evidence to date suggests they may often be less effective, especially where they require positive action by the consumer to access information. Experience in the USA and Sweden has, for example, shown that where smart meter data has been available online, the usage rate has been low at 2 to 4 per cent of customers.

The next step will be to develop the requirements in more detail, taking account of the emerging findings of the Energy Demand Reduction Project. As part of this work we will consider further what specific requirements should apply in cases where it is clear that the individual consumer

does not wish to have a free-standing display. However it will be important that this does not detract from the general premise that a free standing display should be provided with the meter.

The next stage of work will also examine in more detail the minimum functionality which should be required of displays. This will include the minimum common information which should be provided to all consumers, as well as consideration of technical interoperability issues. The approach to delivery will also be developed in further detail, aiming to establish the right balance between flexibility for suppliers to innovate, which the Government recognises will be important, and common minimum requirements.

Section 4: Proposals for the Non-Domestic Sector

Introduction

Around 35% of respondents (particularly suppliers, distributors and energy and metering service providers) specifically replied to the seven questions on the non-domestic market, which dealt with functionality, relationship to existing market operation, legal drafting, smart grid factors, interoperability, market model and the non-domestic Consultation Impact Assessment.

Summary of Responses

Consultation Questions

- | | |
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| 15. | Do you agree with the Government's proposal to extend to the small and medium non-domestic sectors the minimum functionality that we will require for smart meters in the domestic sector, with certain exceptions to allow for individual customer requirements? |
| 16. | Do you have any comments on how such a requirement, and the exceptions to it, should be framed? |
| 17. | Do you have any comments on how the proposed new requirements should work in the context of the current developments in metering in this sector? |

Most respondents responding to these questions supported the approach of mandating smart functionality, and a majority of those also accepted the need for some exceptions. Respondents were broadly comfortable with the proposed roll-out period (to end 2020). Some felt this sector should be prioritised because of the scope for energy saving, although some organisations representing business were, however, concerned about any early imposition of new costs. Respondents had a range of views about the extent of exceptions and the length of time for which they should be permitted. Suggested cut-off dates included 2012 (when respondents expected the smart meter roll-out to begin), 2014 (when advanced metering will have been installed at larger sites) or end 2020 (when the roll-out will be complete). Most large domestic suppliers strongly favoured smart, with more or less strict limits on exceptions. These suppliers argued that a single approach would deliver benefits by enabling the simplification of technology and processes and maximising cost-efficiencies. Various respondents suggested that there was a case for a continued exception from smart requirements for multi-site customers, who might prefer a uniform approach to metering across their sites.

A significant minority favoured mandating advanced functionality. Non-domestic suppliers, particularly in the gas sector, stressed the importance of supplier and customer choice around metering and use of a central communications body. A number of metering and energy service providers were concerned about the imposition of domestic smart functionality, rather than customer choice of metering on the basis of functionality and cost. They emphasised that innovation and investment in metering services had already taken place, and that it had

delivered energy and carbon savings and would continue to do so. Some respondents mentioned the desirability of avoiding stranding risk (and consequent possible loss of early energy and carbon-savings) by offering comfort on non-removal or a promise of compensation for early removal of advanced meters.

Respondents had differing views about the usefulness of some proposed smart electricity functionality, such as remote connection/disconnection and export measurement of microgeneration. For example, some felt that there was particular scope for non-domestic customers to install microgeneration; others considered that imposing metering functionality for microgeneration purposes was more appropriate in the domestic market. Some respondents felt that, certain non-domestic customers would actually require more, or more sophisticated, functionality. Because of the variety of customer needs in this sector, there was little support for mandatory provision of a display device. There were various suggestions about what Government could mandate, such as the periods for which data would be collected, formats for data presentation etc.

There were mixed views about mandatory provision of a gas valve in this sector. Larger, predominantly domestic suppliers broadly preferred the simplicity and cost-efficiencies arising from a common specification. Some predominantly non-domestic suppliers also saw benefits – chiefly in managing credit risk. There was a widely supported view that around 400,000 larger gas meters could not have full domestic smart functionality, particularly the valve, and general agreement that an exception from smart functionality should be made for these larger meters – in industry terms, those above U6⁸.

Respondents who commented had differing views on whether the meter and the communications should be separated – to avoid redundancy of communications - or integrated – to reduce costs and installation time.

Relatively few respondents commented on the legal implementation of new rules, but a common assumption was that they would ultimately be made through a combination of requirements within supply licences and additions to industry codes, made under the powers in the Energy Act 2008.

Consultation Questions

18.	Do you have any comments on the implications of the Government's proposed approach in this sector for the future development of smart grids?
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Respondents broadly recognised the contribution that smart metering in this sector could make to smart grids, although some commented on the uncertainty about the exact nature of smart grid requirements. Network businesses strongly favoured maximising the use of smart metering, although some were more relaxed about permitting exceptions and phasing in smart requirements. The network companies' representative body, the Energy Networks Association, commented that any decision to allow advanced for the small and medium non-domestic sector should take account of any compromise to smart grid functionality that this might give rise to.

A number of respondents were concerned that metering decisions were being driven by smart grids. They suggested that: there was scope for existing metering to assist secure supply

⁸ Gas is provided through a range of meters that must be capable of measuring particular gas flows. U6 is the category of gas meter principally used at sites with gas flows of up to 6 cubic metres per hour. U6 meters are used at the vast majority of domestic and smaller non-domestic sites.

through early energy- and carbon-savings; that the ability to deliver some network requirements by means other than the meter; and that there were limitations on the contribution that metering could make to smart grids before a roll-out was almost complete.

Respondents generally saw little scope for, and consequently little need to tailor policy towards, the development of smart gas grids.

Consultation Questions

19. Do you have any comments on the revised Consultation Impact Assessment for this sector?

A number of respondents commented on the Consultation Impact Assessment. Relatively few responses provided new/detailed data or views about costs. Of those that did, some felt the assumed costs for advanced electricity metering were too high; there were two differing views on the costs of retrofitting advanced functionality to gas meters; and a small number of energy service providers felt that the costs of smart meters had been under-estimated. One consultant suggested that the positive business case had been under-estimated. A consultant pointed out an error in the assumed consumption of non-domestic gas sites. One respondent suggested that the lifespan of advanced meters should be ten years, rather than twenty years. Some respondents referred to access to non-domestic premises, including avoiding disruption during business hours, which could affect both business operation and installation cost.

Consultation Questions

20. Do you have any comments on the implications for the non-domestic sector of the options identified for a domestic delivery model?

There was a variety of views about the use of the central communications arrangements by industry participants. Some wanted its coverage and use to be more or less universal and mandatory (including for advanced meters). A number of respondents suggested it was important for smart meters in this sector to be linked to the central communications provider to support smart grids. A number of respondents questioned whether the central communications provider body should be required to support communications with existing and future advanced metering solutions to support smart grids.

A number of respondents were concerned that mandatory use of a central communications approach in the non-domestic sector could undermine smaller suppliers' and energy service providers' ability to differentiate their services and therefore impact adversely on competition. Some respondents were also concerned that the communications might have high transaction costs for those requiring only limited access and stressed the need for transparent, transaction-based costs for these services. A number of respondents argued that retaining a competitive approach in the non-domestic sector would give Ofgem a comparator for the central communications model in the domestic sector.

Consultation Questions

21. Do you agree with the Government's approach to promoting interoperability in the non-domestic market? Do you have particular views about the interaction between the Government's proposals for the non-domestic sector and the domestic smart meter roll-out?

Of those responding to this question, a majority recognised the desirability of interoperability, most preferred the Government to require it, and many also wished this to be integral to the development of the central communications arrangements. Some respondents saw benefits in pushing down the existing and developing interoperability arrangements for larger sites to smaller sites. Energy service providers were most wary of mandating interoperability. It was suggested that allowing standards to develop in response to technological change would be a more rapid approach than a highly regulated arrangement. Meter manufacturers said EU standards-setting processes might deliver interoperability, but suggested that those processes carried risks in terms of both outputs and potential delays in their being finalised.

Government Response

Non-domestic customers use more than half of the energy consumed in Great Britain. Smart and advanced metering have an important role to play in helping them cut energy use and carbon emissions, as well as improving the service they receive from suppliers. The Consultation Document considered metering at small and medium non-domestic electricity and gas sites⁹. There are over 2 million such sites. The Government proposed to require all of these sites to be provided with smart meters by the end of 2020, whilst allowing continued installation of advanced metering where that was requested by individual customers for operational or business reasons. The Government's objective was to maximise the support provided by metering in this sector for smart grids, whilst taking into account practical issues and the benefits of early energy- and carbon-saving facilitated by advanced metering.

The way forward

The Government notes the range of views expressed by stakeholders on the benefits of using advanced or smart functionality. We recognise that advanced metering is already being rolled out in this sector, and the benefits in early energy- and carbon-saving that continued roll-out can bring. However, the Government also notes that the small and medium non-domestic sector accounts for around 13% of electricity demand, and can therefore make an important contribution to electricity networks' ability to develop smart grids in the future. Smart functionality will be needed to support smart grid development, although advanced meters can also assist network management by delivering early energy and carbon savings to reduce the overall demands on networks.

The Government believes there is a balance to be struck between allowing the market to continue to deliver advanced metering solutions and the related early carbon savings, and moving over time to ensure that the level of smart functionality is maximised in this sector.

In light of the consultation, the Government is adjusting its proposals in this area. The

⁹ The DECC Consultation defines this as sites in electricity profile classes 3 and 4 and non-domestic gas sites with consumption of less than 732 MWh per annum.

Government confirms its intention to mandate the installation of meters with smart functionality at these sites on the same timescale as for domestic sites, with exceptions under certain circumstances. However under the Government's revised proposals the exceptions will be much more limited in respect of meters installed after April 2014.

The Government therefore proposes to require that electricity and gas meters at sites in this category must have smart functionality by the end of 2020 except:

- where advanced meters have been installed before April 2014 and the customer wishes to retain the existing meters; and
- where advanced meters have been installed after April 2014 under pre-existing contractual arrangements; and
- where there are technical constraints on the achievement of smart functionality.

The Government considers that this approach will best balance the need to support future smart grids by maximising installation of smart functionality with the desirability of allowing energy and carbon savings from advanced installations to continue in the short to medium term. However, the Government recognises that exceptions will need to be carefully framed taking into account the technical and commercial complexities. We will discuss these revised proposals with suppliers, customers, meter and energy service providers and other stakeholders to refine the details, before consulting on more detailed proposals.

The arguments on gas functionality are different from those for electricity in so far as they concern smart grids. However, the Government believes it is desirable from a customer perspective that a broadly similar approach be followed for both fuels and therefore proposes to follow a similar approach as outlined above for electricity metering.

However, in the Consultation Document the Government referred to the uncertainties surrounding the use of a gas valve in this sector. We have concluded that, given the substantial differences between the domestic and non-domestic markets, we will not require meters for non-domestic customers to include functionality to support remote enabling and disabling of gas supply. Provision of that functionality will be left to the market.

Displays

The Consultation Document did not make particular proposals about the use of displays in this sector. The Government recognises that the broad range of customers and premises in this sector - ranging from single traders and small shops to large commercial and industrial premises – means that a simple display may not be the best way of engaging a significant proportion of consumers in the non-domestic sector. The Carbon Trust advanced metering trials used a range of feedback methods including emails and access to a website displaying consumption data. The Government does not, therefore, intend to require a real-time display device to be provided to all electricity or gas consumers in this sector. However, as part of further preparatory work on the roll out of smart meters, we will consider what data should be made available to these customers, and what requirements should be placed on licensees to provide such data.

Delivery Model

The Government made no definite proposals in respect of a delivery model, but sought respondents' views on the relationship between the non-domestic market arrangements and the proposed changes in the domestic sector. Respondents expressed a wide range of views on whether the market arrangements for this sector should remain as they are citing a variety of arguments. The Government has noted the range of – often strong - views for and against the adoption of a central communications model in this sector. It also recognises that there is a question of whether the same market arrangements should apply for smart meters as for advanced meters.

The Government notes that electricity network businesses will need access to data from smart meters to develop smart grid capability. It is not immediately clear how this could best be facilitated under the current market arrangements. Use of the central communications services could be one way forward. However, we will consider this and alternative approaches further. Consideration also needs to be given as to whether there are network benefits in the networks' having access to advanced metering data and, if so, how this might be achieved.

The Implementation Programme will undertake further work to look at a variety of issues relating to the establishment of the central communications model in the domestic sector, as well as communications issues more widely. As part of this work, in consultation with interested parties, we will look further at the arguments for and against use of central communications to support meters in this sector and how market arrangements and rules should be developed to support the development of smart grid capability.

Interoperability

The Government also sought views on metering interoperability within this sector, given the large number of sites involved. In tandem with the Government's introduction, in April 2009, of requirements for the installation of advanced metering for larger non-domestic sites, Ofgem has facilitated the development of voluntary interoperability rules for this sector. These are designed to avoid the premature removal of meters or metering systems on change of supplier.

For the bulk of smaller non-domestic customers who are expected to receive smart (rather than advanced) meters, it may be that interoperability could best be achieved through the same arrangements as will apply to the domestic sector. Further work will be undertaken on these issues as part of the Implementation Programme. In respect of further installations of advanced metering, the Government believes that rules governing interoperability for small and medium gas and electricity sites will be needed, and will discuss with industry participants how best to take this forward – for example, by extending the Ofgem-led interoperability discussions being taken forward in respect of larger non-domestic sites or by beginning a separate process.

Impact Assessment

On the basis of the comments we have received, we have made one significant adjustment to the Consultation Impact Assessment by reducing the assumed average volume of gas used by sites. This reduces overall benefits. We have also undertaken a sensitivity analysis on the basis of lower costs of advanced electricity meters, which would marginally increase the overall net benefit. We have made a further significant change, arising from our own detailed re-examination of the model, to correct an erroneously high figure for the annual costs of providing advanced metering. This increases the net benefit. The net benefit is increased further by the application in the counterfactual (“business as usual”) case of the costs of the ongoing provision

of basic meters, which had not previously been incorporated. Lastly, DECC has revised its assessment of the predicted levels of future energy and carbon prices and these have been applied to the Impact Assessment, substantially increasing the benefits from carbon savings. A revised Impact Assessment has been published alongside this document.

Other issues

The Government notes the wide range of other issues raised by respondents. These included, but were not limited to, the need for provision of advice to maximise use of the new meters, the possible need for additional regulatory protection for small non-domestic customers, the cost and accessibility of smart meters and installation services for small suppliers, data security and the relationship of the central communications body to the largest electricity and gas users. The Government is grateful to respondents for raising these issues, which will be addressed further at the appropriate stages of the Implementation Programme.

Section 5: Other Issues

Introduction

The final section of the Consultation Document made proposals on key aspects of the Central Implementation Programme, with question 22 specifically focused on the Programme and next steps, while question 23 asked for views on any other issues. This section of the Government's response is about the issues raised in response to question 23, whilst the next section (section 7) deals with the matters raised in question 22 and sets out next steps on the Programme. A number of issues were raised both under question 22 and question 23, but the summaries below set out these issues only once under one or other of the questions.

Around 20% of respondents responded to question 23. However, the summary below captures not only the responses to question 23, but also general issues raised by responses which were not raised as part of an answer to any specific question.

Summary of Responses

Q23 Do you have any other comments or evidence on issues relating to this Consultation Document or the accompanying Consultation Impact Assessments?

The impact of smart metering on consumers, and the need for the policy development to focus on their interests, was a theme addressed by a number of respondents from different perspectives. While a number of respondents commented on the potential benefits to consumers, others also commented on potential risks and concern about costs. Some respondents were opposed to the proposals on such grounds. A range of issues and suggestions were put forward relating to the importance of capturing the full consumer benefits of smart metering, and ensuring that consumer interests were given sufficient weight. A number of respondents suggested the proposals benefits were too weighted towards benefits to suppliers and should be more focused on benefits for the consumer. Some respondents argued that as suppliers would benefit they (rather than the consumer) should be required to pay. Others felt there should be control on or monitoring of cost pass through. Respondents also highlighted the potential benefits of delivering innovative new services both by energy suppliers and other service providers.

Access to and ownership of consumers' detailed consumption data was seen as an important issue by a number of respondents. There was a need to ensure confidentiality and privacy and thereby build consumer trust, and to ensure a level playing field between energy suppliers and other potential users of this data. A number of respondents commented that greater clarity was needed on who owned smart metering data. Some expressed the view that consumption data is (or should be) the property of the consumer. A number of respondents also discussed the importance of ensuring the overall system was secure.

A number of respondents commented that consumers would need appropriate protections, particularly in relation to remote disconnection and switching between credit and pre-payment. One respondent noted that smart meters would enable 'trickle' energy provision which could limit consumption but continue to provide a minimum level of energy as an alternative to disconnection. Although there were some existing protections in this area, these would need to be updated. Consumer Focus commented that there was potential for time of use tariffs to lead

to greater confusion and complexity for consumers, hindering beneficial switching decisions, and have differential impacts on different groups of consumers. Hence consumers should be adequately supported, e.g. by being enabled to use online switching sites to compare suppliers' offerings as simply as possible. There should be a comprehensive assessment of the potential consumer risks and opportunities resulting from smart metering and a strategy to ensure the best outcome for consumers. This should include a review of the suitability of existing protections, particularly around debt and disconnection and sales and marketing, and the impact of multiple rate tariffs.

A number of individual respondents (prompted by an on-line news story) argued that smart metering should enable consumers to switch automatically (potentially every few minutes) between different energy suppliers so as to be able to find the cheapest source of electricity at any given time. Others suggested that smart meters could enable much faster switching. A number of respondents suggested the settlements process would need to adjust to the use of actual half-hourly data in order to capture the full benefits of smart metering¹⁰.

A number of individual consumers raised issues relating to smart meter communications. These included concerns about potential interference with other devices in the home, and the health effects of electromagnetic radiation from wireless communications technologies.

There was a range of comment on the Government's position on stranded meter assets. A number of respondents did not agree with the Government's stated position particularly (but not only) in relation to regulated meter assets and argued that the Government should do further work to assess the scale of the problem and find solutions (e.g. compensation). The Energy Networks Association called for further engagement between DECC, Ofgem and asset owners on regulated meter assets. Other respondents expressed concern that the Consultation Document suggested stranded asset costs would be passed on to end consumers. One respondent was concerned that a lack of stranding compensation would lead to suppliers avoiding installing 'new' dumb meters. A number of respondents said it would be inefficient to continue the practice of replacing 'dumb' meters with other non-smart meters for re-certification purposes, given that these meters would then be replaced by smart meters before the end of their normal asset-life. This would increase the level of stranding. Some respondents suggested the recertification should focus on a risk-based or in-service testing approach.

A number of respondents noted that suppliers were already providing smart meters or suggested that the level of smart deployment would be likely to increase ahead of the formal roll-out (eg. due to smart meter trials). Some commented that provision should be made to allow "pre-roll out" smart meters to remain in place to encourage early deployment and minimise stranding. One respondent was concerned that early deployment of smart solutions could result in increased market complexity.

A number of gas network companies expressed concern that a supplier-led roll out could enable suppliers to leave gas network companies to provide smart gas meters to 'hard to install' properties which they would be obligated to do under the meter provider of last resort provisions in their licences. They suggested that this licence condition should be removed in the event of a supplier-led roll out. Several respondents queried the need for continuing with the two-yearly inspection requirement and suggested that it should be reviewed, for reasons such as the costs and impacts of visits on consumers. However, a small number of respondents were in favour of continuing the requirement as a means of ensuring safety and security.

¹⁰ At present the settlement process only enables energy suppliers to balance their positions between supply and demand on the basis of average consumption profiles rather than actual consumption data for smaller users.

Several respondents (particularly Trades Unions) raised workforce, skills issues and the importance of labour force planning in the overall roll out. Some respondents suggested that planning was important to ensure that sufficient numbers of trained workers were available to facilitate installation and/or that consideration should be given to re-training once the peak installation period had passed. A range of further points were made including on training and qualification issues; that workers displaced by the introduction of smart meter technology should be re-trained and redeployed; the workforce for the roll- out should come from those already engaged in the industry; and that a directly employed workforce was preferential to a sub-contracting model.

Some respondents commented on scope issues. Several respondents said there were opportunities to realise synergies between water metering and smart energy metering. Some respondents suggested DECC should take early action to ensure that these were not missed. A number of respondents commented that there could be links between the roll- out and the “Digital Britain” objectives of achieving universal access to broadband.

A number of respondents noted that there were several groups across Europe looking at smart metering-related standards. Various comments were made on this point including that the development of EU standards could delay or cut across the GB roll out; that it would not be possible to achieve full standardisation at the EU level owing to different market characteristics; and that it was important to ensure that the UK was engaged with Europe on standardisation.

Comments on the Consultation Impact Assessments are summarised under Questions 2 (Section 2) and Question 20 (Section 4).

Government Response

Respondents have raised a wide range of issues in connection with smart metering. The Government is very grateful for the detailed responses. These responses have helped to further and shape our understanding of the full range of issues that will need to be addressed as part of the Smart Metering Implementation Programme. More detail on the Implementation Programme is set out under Section 6 of this document. Most of the issues in the summary above – for instance security, data protection, the regulatory approach, scope issues - will need to be considered further and in more detail in the Programme. In this response document therefore, the Government limits its comments to the following points.

Consumer Issues

The Government is very clear that the interests of consumers must be central to decisions at every stage and at every level of the Implementation Programme. Consumers must see and feel real benefits from the smart meter roll out if it is to be successful. As a variety of respondents have commented, the Programme will need to address a wide range of issues to ensure maximum overall consumer benefits and to put in place the appropriate consumer protections.

We note the concern raised by some consumers and organisations on the issue of costs and the comments that benefits should be weighted towards consumers rather than suppliers. We have undertaken an extensive amount of impact assessment work to understand the likely costs and benefits of a smart meter roll out and how consumers will be affected under different delivery models. This work is reflected in the two revised Impact Assessments we have published alongside this response document. We will consider these issues further as our plans are

developed under the Implementation Programme. We also note that competition at the retail level will provide a spur to suppliers to minimise the level of costs passed through to the consumer compared to their competitors. Smart metering will also result in cost savings in areas of supply companies' process. Competition will also help ensure all the benefits (including cost savings which initially accrue to suppliers) are passed through to the consumer in the form of lower prices.

Smart metering will also deliver a range of direct benefits for consumers including: real-time information to enable better management of energy and save on bills; faster switching which will drive competition; accurate bills and fewer problems with billing; a wider range of tariffs and services; and better informed energy advice; lower costs for pre-payment users. Overall we estimate that by 2020 on the basis of 2-3% energy savings, the average dual fuel customer will benefit by £28 per annum. The Government and Ofgem will revisit the costs and benefits to consumers at each phase of the Implementation Programme.

The Implementation Programme will need to examine the existing protections for consumers and amend these where appropriate to ensure that consumers remain properly protected. This work will need to cover a variety of issues, including rules relating to remote disconnection and switching between credit and pre-pay. Consumer groups will need to be fully engaged in this process.

The Government believes that smart metering will promote competition and innovation in the choice of energy tariffs and packages suppliers can provide. Ofgem expect that these will range from comparatively simple tariffs to more complex offerings as suppliers seek to maximise the number of customers that engage with the market. Smart meters will therefore support customer choice. They will also provide consumers with detailed information on their energy consumption to enable them to make more informed choices about the tariffs they select. Whilst these are important benefits for consumers, we also recognise that a wider choice of tariffs creates the potential for confusion amongst some consumers. Ofgem have recently introduced new licence requirements that will help to make energy tariffs clearer and more transparent. Ofgem will continue to monitor this issue to assess whether further action is needed going forward.

Smart metering will enable the change of supplier process to be significantly faster than today. However, near-instantaneous switching, as suggested by some respondents, is not readily compatible with existing market and settlement arrangements, under which each supplier must nominate its position for each half-hour, one hour in advance. Under these arrangements suppliers have to calculate in advance how much power they expect their customers will use and have contracts in place with generators to cover that position to ensure the available generation matches demand. Instantaneous switching could also raise difficulties for billing systems and procedures. However, other alternatives may emerge to meet this need if there is demand from consumers. For instance, an alternative would be tariffs which provided for a contract with suppliers for the supply of electricity at spot market prices and a fixed margin to cover costs, as have been available in Scandinavia. As responses to the consultation suggest, it will be necessary to consider how future development of the settlements process should be pursued, to take account both of smart metering and other changes to the energy market including renewables and distributed energy production.

Data Protection & Security

Security of the smart metering system will be fundamental to its successful operation. Appropriate safeguards will need to be put in place to ensure the system and the data it contains

are properly protected. Data and system security are key aspects of the preparation work required for the roll out of smart meters. The Implementation Programme will take a rigorous and systematic approach to assessing and managing these issues.

Smart and advanced metering will result in a step change in the amount of data available from electricity and gas metering. The Government is clear that rules and safeguards will be required to ensure appropriate access to and protection of this data, and to ensure consumer confidence. These rules will be developed as part of the work under the Implementation Programme. This work will need to look at a range of questions including what data can be captured, who should have access to the data and in what circumstances, how the data should be used and stored. Access to and use of data will need to comply with the existing rules in the 1998 Data Protection Act, which, inter alia, addresses an individual's right of access to data and the limits on data that companies may hold, and s.105 of the Utilities Act 2000, which contains provisions about the disclosure of information.

Privacy Impact Assessments will need to be conducted both by the Implementation Programme and those responsible for data under the roll out. Similarly, a Data Protection Act compliance check will be needed for the Programme as a whole and by individual actors. In respect of data and privacy issues, the design and delivery of the project will, therefore, be taken forward in close co-operation with the Ministry of Justice and the Information Commissioner.

Workforce Issues

A number of the responses to the consultation discussed workforce related issues. These included how best to support people in adapting to the changes which the roll out of smart metering will involve for some of those currently working in the industry; and how best to ensure that new opportunities for developing skills and employment opportunities arising from the introduction of the new technology are fully realised. The Government fully recognises these are important issues. The introduction of smart metering should bring new opportunities as well as challenges for individuals and businesses. The Government believes constructive dialogue at all levels, amongst employers, employees and their representatives, training organisations and other interested agencies, will be very important in adapting to the challenges and seizing the opportunities. The Government will also assess the potential supply chain opportunities for UK-based businesses and their employees as work under the Implementation Programme progresses.

Meter Recertification, Stranding & Early Movers

A number of respondents proposed that the recertification regime for electricity meters should be suspended and a risk-based approach should be introduced in its place. DECC officials have discussed this issue with the National Measurement Office who are responsible for these regimes.

We recognise the issues related to minimising the impact of stranding related to certification periods or policy replacement of meters. Whilst the systems and the statutory framework for monitoring gas and electricity meter accuracy performance are different, the overall approach to date has been to keep conforming meters installed and in use until such time that evidence shows that accuracy performance – and other important functions – have degraded to such a state that they fail to meet statutory requirements. There is no existing policy that causes meters,

that still conform to requirements, to be exchanged. The National Measurement Office¹¹ (and formerly Ofgem) has taken forward work with relevant industry players to ensure this is the case. Evidence from sample testing of meter populations provides the rationale for in-service meter certification period amendments (electricity) and meter policy replacement (gas).

The National Measurement Office recognises that changes in the regulatory framework (i.e. implementation of the Measuring Instruments Directive) mean that different factors needed to be considered in the future. As such, the National Measurement Office and Ofgem are working with the Industry Meter Advisory Group (IMAG) to provide a consistent approach to monitoring meter in-service accuracy and resultant actions. Proposed in-service testing procedures for meters conforming to the Measuring Instruments Directive (MID) have now been developed and were recently consulted upon¹². It is possible that these procedures might also be more appropriate, with some relevant amendments, for pre-MID meters as well. As such, National Measurement Office will organise a meeting early in the New Year to discuss this and any other options proposed by stakeholders. However, it is clear that any changes to the existing regime must ensure consumers, and other industry players, remain protected. Indeed it is crucial that consumer confidence is maintained through-out the important transition period to full smart meter roll-out.

A number of respondents suggested that the Government should reconsider its position on stranded assets. The Government remains unpersuaded that there is a case for establishing a scheme to compensate for stranding costs rather than allowing them to lie where they fall. We do, however, recognise that, in some cases, meters have been provided by a network company under a regulated price control as part of their licence obligations, rather than in the competitive market. Where a network company considers that the premature replacement of metering assets due to the mandated introduction of smart meters requires an adjustment to the price control arrangements they will need to discuss this with Ofgem.

We note that a number of respondents suggested existing smart meters already installed under the existing market arrangements should be permitted to remain in place post end 2020. Others suggested that rules should be developed to allow early installations of smart meters, for example as part of trials, and that these should also be permitted to remain in place post end 2020. We also note the concerns of some that allowing early deployments could increase market complexity, for example around technical and commercial interoperability. These issues and the balance of arguments will need to be considered as part of the first phase of the Implementation Programme's work.

Other Issues

We note the concerns of some respondents about the European standard making process. The UK will continue to engage with the Commission on European standards as the Implementation Programme moves forward. A number of respondents commented on the potential linkages between the roll out of smart meters and other areas of Government policy. We recognise that the Smart Metering Implementation Programme will have implications for a wide range of Government policy areas, for instance the Heat and Energy Saving Strategy; ultra low carbon vehicles (electric and plug-in hybrids), water metering and broadband. As part of the work under

¹¹ The National Measurement Office is responsible for meter accuracy issues. Prior to 1 April 2009 Ofgem held this responsibility. See <http://www.nmo.bis.gov.uk/default.aspx>

¹² http://www.nmo.bis.gov.uk/content.aspx?SC_ID=336

Phase 1 of the Programme, further consideration will be given as to how the Programme should interface with other areas of relevant policy.

Section 6: Implementation Programme & Next Steps

Introduction

The final section of the Consultation Document made proposals on key aspects of the Implementation Programme for smart metering and set out the Government's next steps. Around 40% of respondents specifically addressed Question 22 relating to the programme.

Summary of Responses

Consultation Questions

22.	Has the Government identified the right issues for the immediate next steps? Are there other activities or key issues which you think should be addressed at this stage of the preparations for roll out?
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There was general support for the Government's plans to define the programme structure and governance early in the process. The programme required a clear vision and objectives. The governance arrangements should be robust and transparent with clear rules of engagement. Responses provided a general sense of the breadth of stakeholder with an interest in the programme and the need for engagement as it moved forward. Some respondents suggested that any programme board and/or programme owner should be supported by a group of industry representatives. Others suggested there was a need to consider the enduring governance for smart metering early in the programme.

Respondents generally shared the Government view that an overall programme plan was key to the next steps. In defining the plan care should be taken to ensure "fit" with long term strategic vision for the energy sector; to identify internal and external links and dependencies (particularly smart grids); to ensure alignment with the investment programmes in the transition and distribution networks and also to identify the highest priority work.

Many respondents stated the need for a strategic design authority. However, respondents expressed a variety of views on what the role, responsibilities and membership of this group should be. Some thought that such an authority should have a limited role (for instance only during the duration of the programme or only in relation to the communications elements of the programme); others thought that a strategic design authority should have an enduring role.

Some respondents set out their views on the key programme management tasks. Respondents suggested that these should include: further design work on the chosen delivery model and the approach to communications; the implementation of formal programme change control mechanisms to allow for changes to scope and objectives; ensuring the identification and communication of benefits and mapping them back to programme objectives; and workstream identification.

Respondents agreed that a review of existing industry codes and development of a new code or new code rules within existing codes should be an early priority for the programme. Other workstreams identified by respondents included the development of common standards for

meters and communications (with many favouring open standards); review and revision of industry processes and roles; and development of the necessary licence modifications.

Respondents agreed that the provision of a communications solution to support smart metering was a large, complex piece of work. Some respondents made suggestions about the content of the communications work. Some respondents suggested that certain areas should be prioritised such as: identification of industry communications requirements; assessment of the technical capability of different communications technologies; and a review of the potential monopoly / competition aspects of a central communications model. A variety of additional points were raised, for instance the need to define the role of the communications provider; the appointment and role of a central customer/strategic design authority; an assessment of the market attractiveness of centralised communications provision.

A range of respondents commented that an important element of the programme would be putting in place appropriate security, data protection and data access arrangements.

Respondents suggested that the programme would need to work up a strong consumer engagement strategy. Consumer acceptance of the new technology and engagement with the information it provided was vital to ensure the success of the programme and delivery of the benefits. Some respondents suggested that this strategy should focus on engagement with local communities, housing associations and local authorities.

Many respondents made reference to planning for deployment and rollout. They suggested this should cover creation of a pilot phase, co-ordination between the communications solution installation and meter roll-out, and a strategy to manage the tail end of deployment.

Government Response

Implementation Programme

The implementation of smart metering will be the largest and most complex change-over programme in the energy industry since the switch to North Sea gas in the sixties and seventies. It will have a profound impact on the services that consumers receive from energy companies, as well as on vital 'behind the scenes' activities such as settlement and network management. A wide range of stakeholders will have important roles to play in ensuring the programme is a success and realises the full potential for benefits to consumers and the nation.

The Government agrees that a major central programme is required to design and implement new cross-industry arrangements, in co-ordination with the change programmes which industry participants will need to implement themselves. This Implementation Programme will touch all parts of the energy industry and careful design and planning are needed to maximise the benefits to consumers and industry, while driving down on the costs of installing and operating the new smart meters.

The programme of work will start immediately. As an early step, Ofgem and DECC will be holding a meeting with stakeholders to present and discuss plans for the Programme.

Key stages of the Programme

The first step in the implementation process will be to flesh out the policy decisions set out in this document into a series of operational and commercial proposals, and translate these into detailed implementation strategy.

The initial work will be Phase 1 of a Programme that we envisage comprising three broad phases:



Prospectus

The first phase of the Programme will be concerned with defining the scope and key principles of the smart metering solution: these principles will form design parameters which will guide the preparation of detailed specifications and commercial and regulatory arrangements. The key output of Phase 1 is expected to be a Prospectus that sets out:

- A statement of design requirements covering how the key systems and processes necessary to support smart meters will operate, including functional requirements. Key workstreams will include meter and communications functionality and consideration of strategic deployment priorities. This statement will describe the information flows between meters and energy companies, methods of presenting information to customers, controls over the access to smart meters and other aspects of the day-to-day operation of smart metering;
- A commercial and regulatory framework setting out the arrangements that will cover the development, installation and operation of the smart metering solution, including the communications approach. This will define which organisations will be responsible for funding each component of the smart metering solution, how they will recover their costs, the contractual relationships that will need to be established and the licences, licence conditions, agreements and/or codes that will govern the arrangements;
- The phasing and timetable for introducing smart meters, the roles that each party will play in delivering the components of the smart metering solution and the approach that will be adopted to co-ordinate and manage the efficient deployment of smart meters; and
- A Programme plan for the remaining phases of the Programme.

Consumer interests, rules around data protection and access and system security will be core considerations across the range of workstreams and the overarching strategic design.

The final Prospectus will be decided by Government and Ofgem, taking into account the views of stakeholders, and will provide the framework for the detailed design and subsequent stages. We anticipate that Phase 1 will be completed by summer 2010.

Detailed Design

Following definition in the Prospectus, the detailed design phase will prepare the functional specifications for the smart metering solution and detailed definitions of the commercial arrangements that will underpin it. The detail of this work will be set out in the Prospectus, but it will broadly cover: meter functionality, telecommunications, IT systems, access and security arrangements and other details that will need to be specified to allow the solution components to be procured. This phase will also need to include centrally designed consumer engagement and support activities, and detailed design work on any centrally established deployment policies, including the development of, and consultation on, the regulatory regime.

Following the detailed design work, this phase of the Programme will move to establish the regulatory framework and enable procurement of the central systems, telecommunications services, smart electricity and gas meters, and meter installation services. Some of these procurement activities will be managed by central operating entities while others will be the responsibility of energy companies. Energy companies will also need to modify customer billing and other systems to interface with smart metering (while continuing to support traditional metering through the roll-out period). Procurement activities will be undertaken by different parties and in parallel with each other; it is therefore important to develop robust design documentation and testing. Procurement processes will need to comply with EU procurement directives and the internal requirements of each organisation.

Our current view is that the detailed design phase is likely to be completed around summer 2012, paving the way for the build and roll out phase.

Implement Design

It is expected that the final phase of the Programme will include rolling out the central systems, co-ordinating the preparatory work of energy companies, integration testing, implementation of metering system installation standards and system commissioning. There will also need to be an extensive programme of raising awareness to prepare consumers for the installation of meters and to guide them in how to take advantage of the information that smart metering will provide. The Programme will then have a role in monitoring progress during the early meter installation period, before handing over monitoring and policy responsibilities to governance bodies appropriate for the longer term.

Governance

The first phase of the Smart Metering Programme will be a joint DECC/Ofgem initiative. The Programme will be managed according to established and rigorous programme management principles and reviewed under Office of Government Commerce Gateway procedures. DECC will chair an over-arching DECC/Ofgem Strategic Programme Board. This Board will provide the necessary strategic oversight and direction to the Programme during Phase 1. It will provide a high-level forum for ensuring the Programme is aligned with Government policy objectives for smart metering and Ofgem's statutory duties, and consider interfaces with the Government's wider policies.

Ofgem E-Serve will manage and ensure effective delivery of the first phase of the Programme on behalf of DECC. Ofgem's detailed knowledge of the workings of the energy market, its strong relationships with industry players and consumer bodies and its regulatory role, mean it is ideally placed to help design the arrangements for introducing smart metering effectively into the complex structure of the energy industry.

The Government firmly agrees with those respondents who have emphasised that the Programme should effectively engage the full range of stakeholders. In particular, a focus on the consumer's perspective must be at the heart of decision making at each stage under the Programme; as well as the views of industry participants who will take on responsibility for delivery following changes to the regulatory framework. The Programme will therefore develop a range of mechanisms to ensure that stakeholders' views are actively sought and fully taken into account and that the Smart Metering Programme is reflected in wider Government programmes such as DECC's Household Energy Management Meta-Programme.

Much of the evidence and many of the views submitted in responses to the Consultation are directly relevant to issues which the Implementation Programme will address. This, valuable input will be reflected in policy development and implementation as the Programme proceeds.

The final Prospectus will be decided by Government and Ofgem, taking into account the views of stakeholders, and will provide the framework for the detailed design and subsequent stages, including the necessary Government decisions. We anticipate that Phase 1 will be completed by summer 2010.

Annex A

List of Consultation Responses

Respondents

Accenture
Assoc for the Conservation of Energy
Acute Technology
Age Concern
Alcatel-Lucent
Alert me
Apoideas
Arqiva
Arup
Association of Meter Operators
Astrium Satellites
Babcock & Brown
Bailey Energy
British Electrotech & Allied Manu Assoc
British Gas
Bglobal plc
British Chambers of Commerce
British Holiday & Home Parks Assoc
BSI British Standards
Building Services Research & Info Assoc
BT
Cable & Wireless
Cambridge Consultants Ltd
Campaign to Protect Rural England
Capgemini UK
Capital Meters
CE Electric UK
Central Networks
Centre for Sustainable Energy
Ceres Power
Codel
Combined Heat & Power Association
Consumer Focus
Cornwall Energy Associates
Corona
Current Group LLC
Iskraemeco UK
Itron Metering Solutions
JBP Composites
Joint Radio Company Ltd
Kenure
Landis+Gyr UK
Lickorish Consulting
Local Government Association
Logica
Long Wave Energy Ltd
Lowri Beck Services
M2 Laboratories Limited
Macquarie Bank Limited
Marchmont Hill
mBlox Inc and New Energy Finance Ltd
Meter Fit
National Energy Action
National Grid
National Housing Federation
National Nuclear Laboratory
National Right to Fuel Campaign
National Trust
Navetas
ND Metering Solutions
North Edinburgh Fuel Poverty
Northern Gas Networks
Northern Ireland Electricity plc
Northgate Public Service
O2 UK
Ofgem
Onzo Ltd
Orange
Oxford University
Pilot Systems
PRI Ltd
Prolan and EFR

Cygnet Solutions
 Design & Behaviour Group
 Detica
 E.ON UK
 EA Technology Limited
 EC Harris LLP
 EDF Energy
 Electralink
 Electricity North West
 ElectroSensitivity UK
 Elexon
 Elster Group
 Ember Corporation
 eMeter Corporation
 Energy Action Scotland
 Energy and Utility Skill
 Energy Networks Association
 Energy Retail Association
 Energy Saving Trust
 Energy Services Network Assoc
 Energy Services & Technology Assoc
 Energy Technologies Institute
 Engage Consulting
 English Regional Devt Agencies
 Environment Agency
 epay UK Limited
 Ericsson Ltd
 Ernst & Young
 ES Pipelines Ltd
 Federation of Small Businesses
 FibreStream
 First Utility
 Forum of Private Business
 Freedom Group Ltd
 Fuel Poverty Advisory Grp for England
 g15 group of London Housing Assoc
 G4S Utility Service (formerly Accuread)
 Gas Safe register
 Gas Transportation Company [GTC]
 GDF Suez Energy
 GE Energy
 Gemserv
 GMB Union
 Good Energy
 Green Alliance
 Green Energy Option
 Hewlett Packard
 Hutchison 3G
 Prospect
 Pulse 24 Ltd and Energy Assets Ltd
 Renewable Energy Association
 Renesas
 Ricability
 RLtec Innovative Energy Solutions
 Royal Academy of Engineering (RAEng)
 Royal Mail
 Royal National Institute of Blind People
 Royal National Institute for Deaf People
 RWE Npower
 Sagem
 SAP Uk Ltd
 SBGI Utility Networks
 Scottish and Southern Energy
 Scottish Federation of Housing Associations
 Scottish Government
 ScottishPower
 SDLC Solutions
 Senergy Econnect
 Sensus
 Sentec Ltd
 Sharp Laboratories
 Shell Energy
 Sia Conseil
 Siemens Metering Service
 Sigma Designs
 Stark Software
 Sustainability First
 The Application Home Initiative (TAHI)
 Tata Consultancy Services Limited [TCS]
 Thames Water
 TMA Data Management
 T-Mobile
 Truread
 Uni of East Anglia Low Carbon Innovation Centre
 UK Revenue Protection Association
 UK 3point0
 UK Metering Forum
 UK Computing Research Centre
 UNISON
 Unite
 United Utilities
 University of Strathclyde
 Utilihub
 Utilita
 Utility Partnership Limited
 Verdanch

IBM	Vodafone
IMServ Europe Ltd	Voltalis
Independent Data Collector Group	Wales & West Utilities
Institute of Energy & Sustainable Devt	Water UK
Institution of Civil Engineers	Waterwise
Institution of Engineering & Tech (IET)	Western Power
Intellect UK	Which?
Intelligent Heat	WWF-UK
Intelligent Metering Initiative	Xoserve
Intelligent Sensing Anywhere [ISA]	Xsilon Ltd
Independent Pipelines Ltd [IPL]	ZigBee Alliance
Irridian UK	

We also received 86 responses from individuals.

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