Promoting choice and value for all gas and electricity customers

Domestic Metering Innovation - Next Steps

Document Type: Decision Document

Ref: 107/06

Date of Publication: 30 June 2006

Target Audience: The document may be of particular interest to suppliers, network operators, consumer groups, environmental bodies, meter asset providers, meter asset managers, meter operators and metering and communication equipment manufacturers.

Overview:

Introducing smarter forms of metering for domestic electricity and gas customers could help to: improve customer service, increase domestic energy efficiency (helping to reduce greenhouse gas emissions), reduce fuel poverty and increase security of supply.

We have carried out a major study and consultation exercise to look at how to unlock these benefits. The vast majority of respondents believed that the competitive market is the best way to deliver smarter meters and we agree. Energy suppliers need to be more innovative and rise to the challenge of delivering smarter meters that meet their individual customers' needs.

We have an important role to play in helping to make this happen. We will remove regulatory barriers standing in suppliers' way. We will help the industry develop common standards for smarter forms of meters. We are also in discussions with government about managing their trial to assess customer response.

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Context

Reducing greenhouse gas emissions, maintaining security of supply and tackling fuel poverty are key policy objectives for government and for Ofgem. Introducing smarter meters in people's homes could help make progress against all these objectives. Our consultation on smart metering in February generated around 80 responses and was supported by seminars to explore the issues with stakeholders.

Following extensive analysis and consultation, we still think that competition, rather than a "one size fits all" regulated solution, is the best way to deliver smarter forms of metering. Suppliers are best-placed to understand the costs and benefits to different types of customer and deliver the types of meters that customers' want. However, Ofgem recognises that we have an important role to play. We set out here a programme of work to break down regulatory barriers and help suppliers begin to unlock the potential of smart meters for domestic customers.

Associated Documents

- "Energy Efficiency: The Government's Plan for Action" - DEFRA - April 2004.
- "Energy Efficiency Innovation Review: Summary report" - DEFRA, HM treasury, Carbon trust and the Energy Savings Trust - December 2005
- Prepayment meters: Update document on new powers under the Energy Act 2004 including draft statutory instrument - December 2005 (Reference 289/05)

http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/13224_289_05.pdf

- "Our Energy Challenge: Securing clean, affordable energy for the long term." DTI Energy Review Consultation Document - January 2006
- Domestic Metering Innovation - February 2006 (Reference 20/06)
- http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/13745_2006.pdf?wtfrom=/ofgem/work/index.jsp&section=/areasofwork/metering
- Directive of the European Parliament and of the Council on energy end-use efficiency and energy services - April 2006 (the "Energy Services Directive" or the "ESD")

http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l_114/l_11420060427en00640085.pdf

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Summary

Smarter forms of domestic gas and electricity meters could have a significant role to play in improving customer service, tackling climate change by improving energy efficiency, maintaining security of supply, and reducing fuel poverty. In February 2006 we published a consultation document on the case for putting smart meters in people's homes and how best to promote smarter metering. This document sets out the direction Ofgem now intends to take.

Our consultation generated huge interest. We shared our own cost benefit analysis with respondents and organised a seminar to share views. Around 120 people attended the seminar and we received about 80 responses to our document. A wide range of views were expressed on key issues such as the extent to which smart metering is more likely to develop in a competitive or regulated environment, whether the current regulatory framework creates barriers to the introduction of smarter meters and whether a trial should be carried out.

There are a range of smart meter technologies available. Simple devices consist of displays that can be connected to existing meters and can provide customers with a read out of how much energy they are using and what it is costing. More sophisticated and expensive options allow displays, the ability to record customer's energy use every half an hour allowing suppliers to vary their prices across the day, remote reading of energy use and the ability to limit the customer's energy use in an emergency.

Some respondents argued that we should re-introduce regulation of domestic meters and use the network companies to roll out smart metering nationally. They cited other countries such as Italy where this approach had been adopted. We don't think this would be in customers' interests. The track record of the network companies in offering cost-effective, good quality metering services and in choosing reliable metering technologies has been mixed at best. This was one of the main reasons for introducing metering competition. We also think that different types of customer are likely to want different types of smart meter and it would be difficult to meet different customers' needs under a regulated approach. There are also a range of practical barriers to this option as suppliers have now entered into competitive contracts for metering services that would have to be unwound.

Based on our analysis and responses to our consultation, we still think that competition rather than a regulated, "one size fits all" approach is the best way to deliver smarter metering. Suppliers are best placed to understand how different groups of customers are likely to respond to the information that smarter meters will provide. Suppliers are also better placed to understand the costs and benefits to different groups of customers of the different technologies available.

Suppliers have raised some concerns about barriers that may prevent them rising to this challenge. We think some of them are real and some of them are not. Suppliers are concerned about the risk of "stranding" if they put in place a more expensive smarter meter and a customer changes supplier. This is a risk that many other businesses, such as telecom and satellite and cable television companies, face and

manage. If suppliers provide good customer service and competitive prices customers will not switch. Customers have also shown they are willing to sign up to longer term contracts with suppliers and this can also help to manage this risk. And suppliers can sign agreements with each other that they will continue to use and pay for meters when a customer switches.

Ofgem's role and next steps

Given our duties to protect customers' interests and to promote sustainable development, it is our role to provide leadership and direction to help make smart metering a real option for domestic customers. We intend to remove barriers to smart metering as part of a package of measures which acknowledges that while the onus is on suppliers to deliver smart meters, the regulatory framework needs to encourage new products, innovation and investment. We see three major areas where we can help.

First, we will work with the industry to agree common standards to provide for interoperability of smart meters. This will ensure that consumers with smart meters can switch supplier without necessarily having to change their meter and that suppliers will not face technical barriers to interacting with smart meters installed by their competitors. We intend to establish and chair an interoperability working group to deliver this work.

Second, Ofgem's supply licence review will identify and remove any barriers in the supply license such as the requirement to manually read a meter every two years. We are already working with HSE to see if this requirement can be removed and/or amended without safety being compromised.

Third, we are in discussions with government about a possible role for Ofgem in running the trial that government is funding to collect evidence on how customers respond to a range of smart meter technologies.

This work will supplement other work in which Ofgem is already engaged. This includes our investigation of whether National Grid's long term exclusive meter service contracts are restricting competition and innovation in the domestic-sized gas meter market, reviewing metering price controls, providing clearer guidance to suppliers seeking EEC accreditation for smart meters, ensuring that settlement rules can accommodate smart metering and removing obstacles to installation of better prepayment meter technology. We will also use the work on standards to look at the metering needs of customers installing microgeneration as well as those in the non-domestic sector.

1. Introduction

Chapter Summary

This chapter provides some background to this document and describes what follows in the subsequent chapters.

1.1. Smart meters can potentially unlock a range of important benefits for customers and the economy. Against this background, Ofgem launched an initiative last summer to understand the potential scale and nature of benefits compared to the costs and whether the current market arrangements are sufficient to promote innovation in this area. We then published in February a consultation paper in which we presented the analysis and put forward a number of policy options that could be pursued to move us closer to making smart meters a reality for households.

1.2. We supported our consultation by holding three external events:-

- a launch event on 1 February - This was hosted by our chairman, Sir John Mogg. This event was designed to raise awareness in industry and consumer groups and to encourage all stakeholders to think about smart metering and to respond to our consultation
- an industry seminar on 2 March – This was attended by over 120 delegates and included presentations made by range of interested parties including DEFRA, the Carbon Trust, selected suppliers and meter asset managers
- an industry workshop on 13 March - This considered Ofgem's illustrative cost benefit analysis. It was attended by over 40 delegates and resulted in wide-ranging debate on the model and the assumptions underpinning it

1.3. Following this comprehensive consultation exercise, we are now in a position to outline our thoughts on the way forward.

Document Structure

1.4. The document is structured around the thinking behind the policy direction we are setting and the Ofgem actions that we plan to take forward to support it.

1.5. Chapter 2 outlines our policy decision on the market and regulatory arrangements that we believe are most appropriate at this time. It details the original policy options proposed in our February paper and provides a summary of the views of respondents. We make clear our commitment to the metering services market and set out why we believe that ensuring that the market works effectively is the most appropriate policy option for Ofgem and for consumers at this time.

1.6. Chapter 3 outlines the various actions that we will undertake to facilitate more widespread introduction of smart metering. While we believe that relying on suppliers' commercial incentives to improve their customer service should be the central element, we acknowledge that Ofgem needs to show leadership and direction to promote innovation. This chapter sets out what we intend to do, while acknowledging that government may itself have a significant say in how smart metering is taken forward, given the need to implement the Energy Services Directive and the funding made available for a trial of smart metering.

1.7. Finally, the Appendices provide further relevant background, including a more detailed review of the views expressed by respondents to the February consultation.

2. Ofgem's decision

Chapter Summary

There are a wide range of means through which smart metering in the energy market in Great Britain could be promoted and facilitated. Our February consultation opened up a debate about the most appropriate way forward, in the light of interest in the potential for smart metering to be instrumental in making progress against some key policy objectives. This chapter sets out the decision Ofgem has reached about the best way forward and provides the context for the actions we plan to undertake in Chapter 3.

Introduction

2.1. Our February consultation paper provided a framework for debate on the issue of smart metering. The document outlined a number of policy options which could be pursued to take forward the debate. These were:-

- addressing barriers to innovation under the existing framework
- enabling customers to buy innovative meters directly
- imposing an obligation on suppliers to install innovative meters
- re-bundling metering services into monopoly network operations
- awaiting further international evidence on the benefits and customer response to innovative meters; and
- instigating a large-scale trial to increase understanding of benefits.

Views of respondents

2.2. Our consultation closed on 15 March 2006. It generated a significant amount of interest and led to responses from all the major suppliers, meter asset managers, meter manufacturers, consumer groups, academics and other stakeholders. A high-level summary of their responses to our specific questions is given below with further detail provided in Appendix 3. All the non-confidential responses can be reviewed on our website[1].

2.3. It was generally acknowledged that any large scale introduction of innovative metering would be complex and presented significant challenges for the energy sector. Some noted that perhaps more thought should be given to what smart metering will actually deliver before focusing too much on how to bring it about. While respondents had differing views on the policy direction that Ofgem should take, there was a widely-held view that independent and committed leadership from Ofgem was a key ingredient.

[1] http://www.ofgem.gov.uk/ofgem/work/index.jsp?section=/areasofwork/metering

2.4. A relatively small number of respondents, including some of the major suppliers, argued that metering should be re-bundled into network monopoly activities. They claim that through regulation, smart metering can be rolled out nationally, taking advantage of the economies of scale that such a large programme can bring. They point to international experience in markets such as Italy which have chosen this option and question whether the more incremental approach to adoption that may characterise a market-led rollout will adequately capture the benefits available to customers.

2.5. However, other suppliers and other respondents, such as many metering providers, said that, with appropriate guidance and direction from Ofgem, the competitive market would deliver. Many were also sceptical about the direct relevance of international experience to the diagnosis of the needs of customers in Great Britain. There was some agreement that international experience was particularly useful where it illustrated customer response.

2.6. Many took the view that while the competitive market framework is appropriate, some of the detailed regulatory rules need to be amended to promote smart metering. The need to relax the requirement to visually inspect meters every two years was frequently cited. Many also felt that there is a need for industry to agree minimum standards to achieve interoperability. There were also calls to provide protection against asset stranding, although this meant different things to different respondents. Some were focused on cost recovery of installed meters in the event of an accelerated meter replacement, while others thought stranding in the competitive market needed to be dealt with by Ofgem to encourage smart meters to be installed.

2.7. There was a broad consensus that Ofgem's cost benefit analysis was helpful and reasonably captured the current economics of smart metering. There was some concern that modelling a 1% energy consumption saving was too cautious. Many commented on the lack of evidence on the extent of customer response and recognised that additional evidence is required on what stimulates it. However, there was concern from some that trials would only delay key decisions being taken.

2.8. There were a range of views on whether suppliers should be required to install smart meters through legislation. Many were anticipating that the government plans to implement the Energy Services Directive might be relevant here. Most respondents agreed that whatever else Ofgem did, it should focus on addressing barriers that prevent suppliers investing in smart meters.

Our decision

2.9. Ofgem has carefully considered all the responses and the feedback we received. We have decided to continue to rely on competition in the domestic metering market but to work on removing barriers to innovation. We do not intend to re-bundle metering into network operations. We have also rejected mandating the installation of smart meters at this time. However, we acknowledge that government, either in the context of implementation of the Energy Services Directive or the energy review, may decide that legislative or regulatory steps are required. We agree that more

evidence would be helpful to underpin the case for smart metering and we therefore welcome the Treasury's announcement in March 2006 to make funding available for a trial. We are currently in discussions with the government about a possible role for Ofgem in running and managing the trial.

2.10. We explain our reasons for these decisions below.

Competition will deliver for customers

2.11. A fundamental choice needs to be made about the basis for the provision of smart metering before other questions can be addressed. Should responsibility for metering services (including provision and maintenance) be a regulated monopoly activity, or an activity in which suppliers can compete as part of their overall offering to customers?

2.12. Our view is that relying on the commercial incentives of suppliers is the best means of adequately protecting consumers and ensuring that where new metering investment is made, it is cost effective and meets their needs.

2.13. Those who argued that smart metering will not significantly develop unless it is returned to the fold of regulated monopoly operations emphasise the economies of scale that might be associated with a coordinated roll-out of new metering technology and the ability to capture benefits throughout the energy supply chain through a coordinated investment programme. However, the scale and scope of many of these benefits is highly uncertain. Programmes in other markets that have been centrally led by government or regulators tend to have been driven by one or two local market imperatives to which smart metering has been seen as a solution.

2.14. Most respondents agreed that if there is a strong driver for investment in this country, it is likely to be consumer energy savings and the consequent carbon reduction. However, no other market has yet adopted an investment programme purely for this reason. Moreover, given that it is customer response, rather than the meter itself, which delivers any savings, there might be cheaper, less complex ways of deriving the same benefits.

2.15. However, even if the case for more widespread introduction of smart metering was more clearly demonstrated, Ofgem would still in the first place look to suppliers' commercial incentives to deliver the investment. Investment funded through network regulation inevitably passes the investment risk on to customers, rather than the energy suppliers. This is an important consideration in metering where technology choices made today may look ill-considered in five or ten years time when the costs and capabilities of metering and the supporting communications infrastructure are likely to have further declined.

2.16. Furthermore, the value of smart metering varies hugely from one customer group to another. Different customers will respond to different energy service packages in different ways. For some customers, investment in time-of-use

metering may be justified so that more sophisticated tariffs can be offered, while for others simpler, cheaper measures to raise awareness of their energy consumption may be more cost effective and convenient for them.

2.17. Against this background, those best-placed to manage the investment risks, notably the suppliers, should have responsibility for them. Suppliers have the best information about their customers' needs and we expect them to use that knowledge to determine what sort of investment is appropriate and when it should be made. Where potential benefits accrue to networks from the widespread implementation of smarter metering, suppliers and network operators have incentives to reach commercial arrangements to share those benefits. This will then further underpin the products suppliers offer their customers.

2.18. In addition to these considerations, we should not lose sight of the fact that Ofgem originally promoted competition because of concerns about the high cost, poor service and poor technology choices of the monopoly model of metering service provision. Indeed, some suppliers were vocal in arguing that there was a better way forward for customers and these suppliers have responded to the introduction of competition by signing up with alternative meter service providers to get better service at lower cost. For Ofgem to overturn existing policy and seek to return metering to network monopoly operations, we would need to have received compelling evidence from our consultation. In our view we have not received this.

2.19. For many of the same reasons, Ofgem also does not intend to propose that suppliers be mandated to install smart meters in households. Such an approach could be designed to be compatible with a competitive market, but it would only be attractive to Ofgem if we had more evidence that benefits would outweigh the extra costs that customers would have to bear. But even if this evidence was available we still think it unlikely that every customer will want the same type of meter and it would be difficult to promote customer choice under a mandated approach. Even then, we would want to know if this approach was the most cost effective way of delivering sustained energy savings and carbon abatement by the domestic sector. However, as we set out above, if government decides that action of some form to mandate smart metering for some or all customers is required, we will work with it to implement the chosen strategy.

2.20. To help make judgements about the cost effectiveness of smart metering, we believe more evidence is required. In this context, we note that the government's planned trial will recognise that since consumer response, rather than new metering as such, is what will lead to carbon and energy savings, other metering, billing and consumer information solutions need to be tested. Some of these may offer more cost effective carbon reduction options than a relatively expensive national smart metering programme.

2.21. By continuing to place suppliers at the hub of metering competition we will not be actively requiring individual customers to make their own innovative metering arrangements. The existing framework allows customers to exercise such a choice but we note that only a very small number have done so. The high transaction costs that individual householders face in pursuing this option no doubt partly explains

this. While this will remain an option for customers, we do not propose further work to encourage customers to pursue it.

2.22. In the next chapter, we set out what action Ofgem intends to take to promote smart metering within the market arrangements that we have. While at least some suppliers believe there are no fundamental obstacles to implementing smart metering for households, Ofgem believes there are actions we can and should take to improve the environment for investment.

2.23. We interpret our duty to promote sustainable development as requiring us not only to remove barriers to effective competition but to positively look for cost-effective means of promoting smart metering as part of our wider commitment to ensure that the demand side of the market can more actively engage in meeting the challenges that we face. Investment by suppliers, underpinned by a supportive regulatory framework delivered by Ofgem, can unlock the potential for smart meters to deliver great energy efficiency and security of supply as well as contributing to a reduction in fuel poverty.

3. Ofgem's role and next steps

Chapter Summary

This chapter sets out a number of actions, in which Ofgem will play a leadership and facilitation role. While some, such as the interoperability work, are new, others reflect work that we will do in the context of existing Ofgem projects, such as the supply licence review. We believe our work will help to accelerate and encourage the introduction by suppliers of more innovative metering for households and ensure that there are no barriers to suppliers implementing these plans.

Introduction

3.1. Ofgem is committed to providing a supportive regulatory framework for smart metering. We recognise that improved metering and billing for customers may have a key role to play in delivering a sustainable energy market, by encouraging customers to save money on their bills, while reducing their consumption and helping to tackle climate change.

3.2. Our proposed measures include the following:

- Unblocking technical and commercial obstacles to suppliers proceeding more quickly and more ambitiously with their investment plans (through work on interoperability)
- Ensuring suppliers' gas and electricity licences are amended so that any necessary conditions on metering are appropriate for the developing metering services market
- Supporting work to gather more evidence on customer response and possibly working with government to manage the trial they are funding
- Exploring the scope for more active promotion of smart metering, by clarifying the steps that need to be followed to receive EEC accreditation
- Reviewing the price controls on basic gas and electricity domestic metering to ensure that they send the right signals to suppliers and investors, while protecting consumers
- Working with Elexon to ensure that electricity settlement rules are adapted to the needs of smart metering
- In all of these areas of work, ensuring that the needs of prepayment meter customers and microgeneration are addressed.

3.3. In addition Ofgem is currently taking forward two Competition Act investigations which have a bearing on the metering market. One concerns National Grid's conclusion of Meter Service Agreements (MSAs) with a number of major suppliers, the other concerns EDF Energy's withdrawal of meter data services from electricity suppliers that are not affiliated to EDF. On the former, while we have not yet made a final decision as to whether National Grid has infringed the Competition Act, our initial findings, set out in a Statement of Objections, were that the contracts lock suppliers into National Grid for a significant share of their domestic gas meter

requirements, and thereby restrict the development of competition in the domestic-sized gas meter market.

3.4. We set out the detail of our proposed actions below.

Addressing barriers to innovation

3.5. A key part of Ofgem's work is removing barriers to markets working effectively. This applies as much to metering as to the other parts of the energy supply chain which we regulate. The interconnected nature of gas and electricity market means that industry needs common processes and systems to make competition work. In metering, this means there may be a role for Ofgem in promoting interoperability of smart meters between suppliers. Where suppliers' licences seek to protect consumers and promote interoperability in metering services, one objective of our supply licence review is that they do so in a manner that is proportionate and coherent.

Interoperability

3.6. While we believe that there are no technical obstacles which prevent suppliers investing in smart metering for households, more can be done by Ofgem, working together with stakeholders, to improve its commercial viability. When suppliers install smart meters, one risk they face is that the customer may switch supplier before the supplier has recouped its investment. This stranding risk is normal in a competitive market and suppliers have strong commercial incentives to try to mitigate it. Most obviously, they want to ensure that their product is attractive so that the customer will not change supplier. But where customers do switch, suppliers and meter providers have incentives to enter into arrangements with each other so that the meter rental continues to be paid by the new supplier.

3.7. These processes appear to work satisfactorily in the current market where most households have basic meters using simple technology. However, as suppliers introduce more advanced metering, this raises new interoperability challenges. For example, if an outgoing supplier has installed a remotely read meter, an incoming supplier will need to operate to the same technical standards so that its systems can interact with that meter and benefit from the functionality it offers.

3.8. Market participants therefore need to agree common standards to provide for interoperability of smart meters. This may lead to voluntary industry agreements on standards. If not, Ofgem reserves the option, consistent with our better regulation duties, to propose licence modifications requiring suppliers to comply with standards. This will ensure that consumers with smart meters can switch supplier without necessarily having to change their meter and that suppliers will not face technical barriers to interacting with smart meters installed by their competitors.

3.9. Markets can and often do solve these problems themselves, without any regulatory intervention. However, feedback from our consultation strongly suggests

that stakeholders believe Ofgem should facilitate these developments. It may be that our initiative can lead to faster results than the market will deliver by itself and therefore an earlier, faster introduction of better metering.

3.10. We therefore intend to establish and chair an interoperability working group to deliver these technical standards. This group will include representatives from various stakeholders, including suppliers, distribution network operators and customers. We will speak to individuals representing the key stakeholders to help define terms of reference for this workgroup and we plan to hold the first meeting of the group in September. We see no reason to restrict the scope to domestic metering given that many of the same issues will apply to metering for smaller commercial customers in the non half hourly market. The group will also need to take account of the metering needs of microgeneration. Similarly, standards issues in prepayment meters may need to be addressed, either by the workgroup or separately in the context of Ofgem's other work on prepayment meters.

3.11. After the initial meeting, we will need to move forward against a tightly-defined set of objectives to an agreed timetable. While sufficient time will need to be allowed for the objectives to be met, this workgroup will need to make real progress and stick rigidly to its agreed terms of reference. To this end, we will ensure that, where necessary, we seek the support of senior management in the companies to deliver the results we require.

3.12. The ground this workgroup will cover is not necessarily new. For example, an expert group was established by ELEXON some time ago to develop a code of practice to provide for a common communications interface to facilitate the introduction of innovative technology in the non half hourly market. But as technology has moved on and smart metering becomes a more real prospect for households, there is a clearer need than ever before to review and address these issues.

Two Yearly Visual Inspection Review

3.13. A number of respondents have suggested that the need for suppliers to make arrangements to visually inspect meters every two years[2] should be removed. This requirement reduces the benefits to suppliers associated with the ability to read the meter remotely. Ofgem has committed to review this part of the supply licence[3]. It is planned that any necessary licence amendments will take effect from June next year.

3.14. Standard Condition 17 of the electricity supply licence requires that a supplier shall use all reasonable endeavours to ensure that, at least once in every period of two years, it inspects any non-half-hourly meter at premises at which it has continuously been the supplier. The gas supply licence has a similar although

[2] The gas supply licence relates to all gas meters whereas the electricity supply licence only refers to non-half hourly meters.
[3] The Supply Licence Review consultation document is scheduled to be released on the Ofgem website, www.ofgem.gov.uk, in July.

slightly stricter visual inspection requirement. It requires that the supplier use all reasonable endeavours to ensure that, at intervals of not more than 2 years, an inspection of the gas meter and associated installation takes place, either where they have been the continuous gas supplier over this period or where the relevant transporter informs the licensee that such an inspection is due.

3.15. Ofgem is committed to resolving this issue to enhance the prospects for smart metering while meeting the concerns of key stakeholders, notably the Health and Safety Executive (HSE). In this context, the Energy Retail Association and the HSE have agreed to develop a risk assessment approach which will consider the need to inspect meters taking into such factors as their type, age, location and, indeed, whether innovative metering functionality (which allows for remote diagnostics) has actually been installed. We intend to consult on this issue as part of our proposals for new standard conditions for gas and electricity supply.

Managing a smart metering trial

3.16. We welcome the Chancellor's announcement, in this year's Budget, of an allocation of £5 million to the DTI to help co-finance, with energy companies, a pilot study in the use of smart meters and feedback devices, including those which can be attached to existing meters. The trial's budget has now been increased to £10 million to be allocated on a co-financing basis.

3.17. Following an invitation from government, Ofgem is in discussions with government about playing a role in the management of the trial. The trial will enable Ofgem, government and all stakeholders to gather firmer evidence of customer response to improved information on energy consumption through a variety of measures. Depending on the projects selected for the trial, this may include measuring customer response to the use of visual display units, through to more accurate billing and time-of-use tariffs.

3.18. The results of the trial will help inform any action required to meet the government's target of saving 0.2 million tonnes of carbon from better metering and billing by 2010.

Reviewing metering price controls

3.19. We have published a consultation paper in parallel with this document on the future of the metering price controls. This assesses the extent to which competition has developed sufficiently in this area for the controls to be removed, or whether they are still required for a further period to protect customers. These controls only apply to the basic metering services that are available from the regulated incumbent providers. We refer you to this other document for further details on our proposals for the controls[4].

[4] Metering Price Control Review, Reference: 108/06 on www.ofgem.gov.uk

Energy Efficiency Commitment

3.20. The EEC requires energy suppliers to achieve targets, set by DEFRA, for delivering energy savings in households. We administer the programme. This role includes approving the suppliers' schemes and determining the energy savings resulting from them. To encourage the use of smart meters in these schemes, we have compiled guidance on trial requirements and are communicating this to suppliers who are seeking EEC accreditation for smart meters and associated feedback devices. We provide more details on this in Appendix 4.

3.21. The EEC contributes to the Government's Climate Change Programme by cutting greenhouse gas emissions. At least 50% of the energy savings achieved under the EEC must be targeted at certain low-income domestic consumers, known as the 'Priority Group'. (As such, the EEC also contributes to the Government's Fuel Poverty Strategy.) Suppliers can choose which energy efficiency technologies they employ to meet their targets. Ofgem developed the EEC Scheme Spreadsheet to detail the energy savings from standard qualifying energy efficiency measures. If a supplier wishes to promote a new or innovative measure they must provide robust, independently verified, evidence to Ofgem to substantiate the energy savings claimed.

3.22. There are further developments planned for the next phase of the EEC, which will run from April 2008 until March 2011. The government are considering making EEC more flexible by allowing the inclusion of microgeneration and measures that reduce consumption such as smart metering.

3.23. In line with this, Ofgem will ensure that participants of the trial announced by the Treasury, discussed earlier, have structured their proposals to comply with EEC requirements so that their results can be used in the programme. If possible, initial findings from any pilot will feed into the EEC 2008-2011 proposals. Ofgem will also continue to support each supplier's own activity by providing guidance on how they can design their metering trials to inform this next phase.

Prepayment Meters

3.24. We are leading a number of activities to promote the adoption of smarter prepayment meters (PPMs). We want to ensure that PPM systems are operated as cost effectively as possible and that there are no barriers to innovation. PPMs play a vital role in preventing customers building up debt and are a favoured method of budgeting for many low income customers. They also have the potential to encourage energy efficiency though improved awareness of energy use.

3.25. Token meters are the most basic type of PPM and have a number of limitations in comparison with other prepayment meter types[5]. If suppliers are unable to gain

[5] The electricity PPM market (3.6 million customers, or 14% of domestic electricity customers) has three main types of meters in use: token; key; and smart card meters. Smart card and key meters are already semi–smart in that they convey information via the payment device enabling suppliers to make remote

timely access to recalibrate them, customers can build up debt following price increases. We are planning to require suppliers to recalibrate PPM meters in a timely manner through our supply licence review. We are also seeking further information from suppliers on their planned timescales for removing all token PPMs.

3.26. Additionally, through our new powers under the Energy Act 2004, we are in the final stages of a consultation on extending the rules that govern the range of payments that can be collected though a PPM. At present, gas and electricity suppliers may only recover money from a particular PPM for a single fuel type and in relation to a stipulated property. Our proposed changes include provision, where suppliers and customers agree, for using a single PPM to collect payments for both gas and electricity. We expect that supplying both fuels through a single PPM will generate cost savings for suppliers. This change will remove existing barriers to the provision of such a service and may open up opportunities for new metering products.

3.27. Meanwhile, Ofgem will continue to identify ways in which services to PPM customers can be improved. We will commission new research this year on the experience of customers using PPMs to inform our work. This will help in determining whether there are further customer issues which smarter metering could address, including supply issues around disconnection and ease of recharging. Furthermore, as part of the supply licence review, we are looking at the provision of information by suppliers on the operation of PPMs and whether steps need to be taken to increase awareness of their disadvantages as a payment option.

3.28. Given rising levels of fuel poverty, Ofgem is committed to encouraging cheaper, more innovative prepayment technology and ensuring that regulation sends the right signals to suppliers and meter providers.

Electricity Settlement

3.29. If smart meters are to be deployed in large numbers for domestic and smaller commercial electricity customers, ELEXON needs to make refinements to the electricity settlement system. To meet this need, they have initiated a project to determine what changes are required to their systems and processes to facilitate market driven rollout of smart metering[6]. Ofgem will ensure that the interoperability work takes into account progress in this area.

3.30. Among the issues on Elexon's agenda are the following:

adjustments to the meters. They also allow two way communications in that tariffs and other information can be loaded onto the meter and meter reads and tamper alert can be fed back. Virtually all of the 2.2 million gas PPM customers (about 10% of domestic gas customers) use Quantum meters, which use smart card technology.

[6] This consultation can be accessed via the following link: http://www.elexon.co.uk/documents/Consultations/BSC_Smart_Metering_Review_-_Consultation_on_Issue_Catalogue/smart_issues_catalogue_v1_0.pdf

- Access to the half hourly market - more smaller commercial customers might install half hourly meters if it was less onerous and expensive to operate in this market. Elexon is reviewing whether it can reduce some of these requirements for smaller customers.

- Systems – when introducing smart meters that record half hourly data, suppliers will need to ensure their agents can submit reliable data, which may impact on their accreditation and system certification. There may also be a need to upgrade the settlement system to process increasing amounts of half hourly data.

- Contractual arrangements - the introduction of smart meters is likely to require the establishment of a number of contractual agreements between different parties. It is important that such agreements, which may involve non-BSC parties, are aligned with the requirements of settlement.

3.31. Further details can be obtained from Elexon[7].

Energy Services Directive

3.32. The End Use Energy Efficiency and Energy Services Directive ("the ESD")[8] came into force in the EU in April 2006 and needs to be implemented by May 2008. The ESD provides for Member States to take forward a range of energy efficiency measures. On some interpretations, the ESD may require action to deliver time-of-use metering for the domestic sector where it is deemed to be technically possible and financially reasonable and proportionate.

3.33. It is for government to determine what implementation steps are required for the UK to comply with the ESD. For our part, Ofgem is committed to working with government on the conclusions they reach and to assist in taking forward any work required in the meantime.

[7] www.elexon.co.uk
[8] . The full text of the Directive can be accessed at http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l_114/l_11420060427en00640085.pdf

Appendices

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Appendix 1 - Consultation Questions

1.1. In its consultation document "Domestic Metering Innovation: 20/06" published in February 2006 Ofgem sought the views of respondents about a number of questions as set out below:

CHAPTER: One

➔ **Question 1:** Should Ofgem also look at smaller industrial and commercial customers as part of this project?

CHAPTER: Two

➔ **Question 1:** Do the innovative metering options outlined in this chapter adequately capture the technologies available and the benefits they can bring?

➔ **Question 2:** Does international experience of installing and using smarter metering provide any lessons for Great Britain?

CHAPTER: Three

➔ **Question 1:** What issues, if any, need to be addressed in the current regulatory framework, if we are to ensure that the market promotes innovation in domestic metering?

CHAPTER: Four

➔ **Question 1:** Do you think that Ofgem's estimates of costs and benefits are reasonable?

➔ **Question 2:** Do you agree with the assumptions that underpin them?

➔ **Question 3:** Are customers prepared to pay more for more innovative meters that enable them to better manage their energy use and allow for better customer service?

➔ **Question 4:** Do you have any evidence of likely supplier and/or customer response?

CHAPTER: Five

➔ **Question 1:** In the light of the evidence presented in this paper, which of the six policy directions outlined is the most appropriate for Ofgem to pursue? Are there any additional options that need to be considered?

➔ **Question 2:** Are there are any barriers preventing the existing arrangements delivering more innovative metering? How could they be overcome?

➔ **Question 3:** Could a large-scale trial significantly improve the evidence of the benefits of smarter metering?

Appendix 2 - List of Non-Confidential Respondents

List	Name
1	Accenture
2	Actaris
3	Ampy Metering, Landis and Gyr
4	PW Baker
5	Bayard Group
6	Jeff Beal
7	BEMCA
8	Bizz Energy
9	Box Ten Ltd
10	British Standards Institute
11	Philip Bryan and John Gibson
12	Capital Meters
13	The Carbon Trust
14	CE Electric
15	Centrica
16	Citizens Advice Bureau
17	Cre8
18	Creative Environmental Networks
19	EA Technology
20	Eaga Partnership
21	EdF Energy
22	ElectraLink
23	ELEXON
24	eMeter Strategic Consulting
25	Energy Action Scotland
26	Energy Assets Limited
27	Energy Networks Association
28	Energy Retail Association
29	Energy Savings Trust
30	Energy Systems Trade Association
31	energywatch
32	Environmental Change Institute
33	E.ON UK
34	FSK Technology
35	Fuel Poverty Action Group
36	GASTEC at CRE Limited
37	Good Energy
38	Horstmann Controls Ltd
39	Institute of Energy and Sustainable Development

List	Name
40	Imperial College Centre for Energy Policy and Technology and Control and Power Research Group
41	Iskraemeco
42	Itron Ltd
43	Mark B. Lively
44	LogicaCMG
45	Macquarie Bank Limited
46	Meter Fit (North West/East) Limited
47	National Energy Action
48	National Grid
49	National Right to Fuel Campaign
50	Northern Gas Networks Limited
51	Olive Domestic Metering Limited
52	Orion New Zealand Limited
53	ResponsiveLoad Limited
54	RWE Npower plc
55	SBGI
56	ScottishPower
57	Scottish and Southern Energy
58	Sentec Ltd
59	Siemens Energy Services
60	Stark Software International Limited
61	Andrew Stunnell MP
62	Sustainability First
63	Oliver Tickell
64	Brian Tolley, xtra
65	Ralph Turvey
66	Ubiquitous Ltd
67	UK Metering Forum
68	United Kingdom Revenue Protection Association
69	United Utilities
70	Catherine Waddams

Appendix 3 - Summary of Responses

Responses received by Ofgem which were not marked as confidential have been published on Ofgem's website at www.ofgem.gov.uk. Copies of non-confidential responses are also available from Ofgem's library. The following is a summary of those responses.

CHAPTER: One

Question 1: Should Ofgem look at smaller industrial and commercial customers as part of this project?

1.1. A number of respondents commented that our focus should encompass the smaller industrial and commercial gas and electricity customers due to the similar problems and potential benefits with domestic customers. RWE npower noted that SMEs should be considered although any necessary action was likely to occur naturally as a result of domestic-focused initiatives. However, a number of respondees took a different view. Horstmann Controls were of the opinion that there are significant differences between these two sectors with suppliers applying clear segmentations to these two groups.

CHAPTER: Two

Question 1: Do the innovative metering options outlined in this chapter adequately capture the technologies available and the benefits they can bring?

1.2. Most respondees were of the view that the technology summary was sufficiently accurate. Comments focussed primarily on highlighting additional aspects. Scottish Power felt that duel fuel options should be explored further along with the market implications. CE Electric commented that significant systems changes would be required to support interval metering. This could improve network load forecasting and facilitate economic charging at lower voltage levels – but only after significant investment.

1.3. MAMs, manufacturers and other service providers were largely in agreement with the summary, although Siemens felt that our groupings were perhaps too simplistic adding that dynamic load control was unlikely to apply to domestic customers. They also felt that we did not explore adequately the advances already in place for PPM meters such as smartcard and key. Meanwhile, the Energy Services Trade Association and Iskraemeco noted that gas meter batteries were already being manufactured with a 20 year life span. Olive Domestic Metering felt that while our technology options were comprehensive, we did not adequately deal with issues such as information ownership, etc.

1.4. Interested parties also were in broad agreement with the summary, although the Environmental Change Institute would have liked to have seen more made of display monitors. Imperial College observed the need to make the distinction between the technology and its application, as different energy supply scenarios

would favour different market models. For example, a strong shift to wind and wave power would work best with a pricing scheme that reflected the marginal cost of energy, while a nuclear energy focus could adequately utilise a multi-tariff structure such as the Tariff Bleu in France. Ralph Turvey echoed previous concerns that more discussion around real-time pricing was required.

Question 2: Does international experience of installing and using smarter metering provide any lessons for Great Britain?

1.5. There was general agreement that international examples had limited relevance to the Great Britain metering market. However, E:ON felt the US and Sweden were relevant as they showed that metering technology was continuing to evolve and suppliers needed to manage a variety of technologies. RWE npower noted that Ontario had encouraged minimum technological standards but allowed enhanced services for a fee.

1.6. Northern Gas Networks and CE Electric felt that the international examples emphasised the importance of clarity on the objectives of any potential implementation of innovative metering in this country. A number of network operators commented that innovation roll-out in other countries was usually undertaken by network operations. Elexon commented that lessons for settlement processes in other countries are likely to be limited.

1.7. Siemens noted that there has been a significant roll out of keypad and other PPM meters in South Africa. National Energy Action believed that we should investigate further the reasons for the PPM system in Ireland being cheaper than in Great Britain. FPAG noted that the Northern Ireland example provided good lessons for this country.

CHAPTER: Three

Question 1: What, if any, issues need to be addressed in the current regulatory framework, if we are to ensure that the market promotes innovation in domestic metering?

1.8. While most respondees commented on changes within the existing regulatory framework, some, such as SSE, said the existing regulatory structure was incompatible with the widespread implementation of innovative metering. Metering competition had simply not worked. More generally there was a call for strong leadership. Energy Assets Ltd said that Ofgem must be given a clear mandate to provide the lead in the promotion of smart metering and must be seen as its champion.

1.9. The majority of concerns mirrored those highlighted in our earlier paper such as the need to review the 2 yearly visual inspection. This was noted by MAMs, meter manufacturers, service providers and other interested parties. However, the UK Revenue Protection Association asked that two year inspection was retained in order to control theft.

1.10. Asset stranding and the 28 day change of supplier rule was another regulatory issue that was frequently highlighted. The Bayard Group and BEMCA, among others, felt that asset stranding should be addressed so that suppliers are not exposed to unwarranted commercial risk. A number of respondents called for long term contracts to write off the capex costs of new meters.

1.11. Nonetheless, others believed that there was no need to change the 28 day rule, particularly if interoperability issues and data protocols were agreed.

1.12. The need for meter standardisation was often discussed. Some, such as energywatch said that suppliers should be obliged to replace existing basic meters with advanced metering arrangements when the former reaches the end of its useful life. Others, such as the SBGI, sought a “no-regression” mandate, whereby suppliers are required to support any metering arrangements inherited on change of supplier. As alternatives EA Technology suggested Ofgem should mandate more frequent meter reads, and Energy Assets Limited proposed that suppliers are required to publish multi-rate tariffs.

1.13. RWE npower suggested that all meters should have a basic functionality, incorporating as many features as possible, as the greater the level of basic functionality provision, the lower the marginal costs of supplier's packages.

1.14. A more widely advocated option though was the development of a core functionality, or minimum standard. This option was proposed by the ERA as well as a number of meter manufacturers. As the minimum, for example, Iskreameco would like to see all meters have a data or pulse output. The ERA would like to take this further and develop a common framework, which they feel will be vital for suppliers to develop technological solutions.

1.15. The need for interoperability was stressed by many respondents. Centrica was of the view that while there was no need for fundamental changes to the current competitive framework, there was considerable value for Ofgem and the industry to work together on interoperability issues. Horstmann Controls noted the importance that each Suppliers’ systems and processes can use or exchange common data with metering and data retrieval service providers. They felt that this is fundamental for competition in metering services.

1.16. A number of respondents covered aspects that are being progressed in other areas of Ofgem’s work. National Grid, amongst others, discussed the meter tariff caps and the cross-subsidy between gas credit and gas PPMs. They felt that the tariff caps on gas meter rental were the least cost provision and this in turn had formed the basis for the competitive offerings.

1.17. Regulatory uncertainty was commented upon by a number of parties. Macquarie Bank felt that clarity in the current regulatory environment would facilitate further investment in the metering sector. There was also a call to reduce the complexity of regulation, standards and codes. Then, a number of respondents, such as E:ON noted the linkage to the EEC programme administered by Ofgem. They

believed EEC credits should be applied to supplier programmes that increase consumer information (whether or not based on smart meters), which lead to changes in customer behaviour.

CHAPTER: Four

Question 1: Do you think that Ofgem's estimates of costs and benefits are reasonable?

1.18. In general, most respondents agreed that our analysis was reasonable.

1.19. Centrica and E:ON, noted that the benefits would not be the same for all groups of customers. Elexon commented that any new profiles would result in central development costs.

1.20. There was significant debate on the potential energy savings associated with smart metering. While many appreciated the difficulty in predicting customer response many felt that we were either too optimistic, or overly cautions. For example, Scottish Power noted that their experience had shown that the fuel poor had offset the energy savings from insulation and increased the temperatures in their houses, leaving no net gain. Sustainability First suggested using energy savings of between 1 and 3%, while the Energy Savings Trust felt that 1% was too cautious. However, they did note that even this represented a notable proportion of the Government's CO2 target.

1.21. Other factors commented upon were back-office costs. Some, like Cr8, felt that these were underestimated. In contrast, others commented that not all benefits required big changes in supplier billing systems as many facilities could be offered without requiring major tariff changes. Iskreameco felt that theft had been underestimated.

Question 2: Do you agree with the assumptions that underpin them?

1.22. Those that did comment were generally satisfied with the assumptions made. Once again there were some comments on the energy savings assumptions which many felt were too conservative, National Grid were not convinced of the ability of customers to peak shift their gas usage.

1.23. There were a number of specific comments on a broad range of topics. SBGI noted that the most expensive and difficult part of a gas PPM is the valve. As such there was not much cost advantage between basic and smart meters. Meanwhile, Energy Action Scotland agreed that increased awareness is likely to lead to reduced energy usage, but did not agree that remote disconnection or switching between credit and PPMs would benefit customers. National Energy Action felt that the model failed to make the costs to consumers explicit. Meanwhile, Siemens did not agree with the implication that sophisticated meters were the only solution. They felt that if

there was only a need for more accurate billing and information for energy management this could be achieved with a “simple smart meter”.

1.24. More specific comments were also provided. SSE felt the discount rate of 3.5% should have been at least 5%. The UK Revenue Protection Association urged caution on the 25% theft reduction assumption citing US data that showed the potential for energy theft to increase. The UK Metering Forum felt that as implementation is a key factor in the business case, the model should not have been costed as instantaneous. They also felt that a macro CBA assumes all suppliers have the same ethos and behaviour, which is not the case.

Question 3: Are customers prepared to pay more for more innovative meters that enable them to better manage their energy use and allow for better customer service?

1.25. The overall theme of responses to this question is that some customers may pay more, but in general there is uncertainty to the extent.

1.26. Capital Meters said that, with greater understanding, customers may rationalise higher costs against the benefits of reduced costs and increasing functionality. Gastec at CRE Ltd noted that, for some customers, a 5% energy saving would give customers about a 3 year pay back for a meter that costs about £150. However, EAGA questioned why customers should be paying extra for receiving services that they might reasonably expect to be a basic element of the contract with their energy provider.

1.27. Suppliers offered varied comments. Centrica believed that only a few domestic customers are likely to be interested in owning their own smart meters but more may be prepared to pay a premium for such a service. Similarly, E:ON felt that only customers interested in technology and energy would pay more. Good Energy noted that this should happen by customer choice, within a fully competitive environment. RWE npower offered feedback from their customer group discussions, which indicated that customers might be interested in paying for enhanced services, but are more likely to do so only if they have had bad service in the past. Scottish Power did not believe the majority of customer will pay more. SSE were uncertain.

1.28. However, Echelon believed that customers would be more responsive now because of high energy costs. Ubiquitous believed people need to be given the choice, while the Carbon Trust said they had some evidence that customers are prepared to pay for an improved service.

1.29. Andrew Stunnell MP wrote that the introduction of smart meters should be coupled with a mass education campaign to maximise their effects. IESD, however, believed vulnerable social groups experiencing fuel poverty are going to be difficult to reach using traditional information campaigns. The National Right to Fuel Campaign wanted reassurance that vulnerable customers did not bear the cost of the development and installation of these meters.

Question 4: Do you have any evidence of likely supplier and/or customer response?

1.30. There was very little response to this question. Siemens suggested that the water industry experience shows that consumers are reticent about new metering. They suggest that a full trial could be by-passed. Instead, straight forward customer opinion research could map the way forward. Nonetheless, Capital Meters and SBGI feel that the 70% of PPM customers not in debt proves that customers are willing to pay more to manage their spending. Stark Software International felt the use of Economy 7 meters proved that customers will respond to time based tariffs. The Bayard Group cited evidence presented to the Australian Utilities suggesting customers are becoming increasingly receptive to the benefits such technology can offer.

CHAPTER: Five

Question 1: In the light of the evidence presented in this paper, which of the six policy directions outlined in this paper is the most appropriate for Ofgem to pursue? Are there any additional options that need to be considered?

1.31. There was a wide range of responses to this section. Rather than proposing one course of action, most advocated a multi-faceted approach.

1.32. Overcoming barriers to innovation was advocated by more than half the respondents. While the need to relax/remove the need to visually inspect meters was noted by some, comments were also made on the need to establish some form of standardisation. It was generally accepted that this should be low enough to ensure maximum flexibility but high enough to facilitate the customer transfer processes.

1.33. Many were also concerned on how to avoid the stranding of metering assets. A number of responses noted that standards should be established to encourage the retention of installed meters and thereby lower the risk of stranded assets. In this context, the ERA said they were formulating a viable commercial framework to encourage investment in smart metering and attempt to address issues of interoperability. EDF echoed some of these points advocating the formulation of a multi-party industry approach on stranded assets and the connected commercial terms for meter asset adoption, to be reached under regulatory supervision. Without this stability and structural platform, they felt there would need to be a return to a fully regulated MAP/MAM environment.

1.34. Some respondents felt the business case already existed for niche markets, and as these installations occur more frequently a natural tipping point would be reached. There was a call for Ofgem and Governments to have more faith in the markets that they helped create and let market forces determine the case (or not) for smart meters.

1.35. The majority of respondents felt that rebundling metering provision into network operation was not the way forward. However, there were a number who favoured this approach, including some variations. For example, SSE suggested that

only the meter asset provision should return to networks, with meter operating activities remaining open to competition. RWE npower proposed that regional franchises could be awarded to install smart meters.

1.36. British Energy were also supporters of re-bundling as they were not convinced that competition would deliver smart metering and they felt that the lowest cost option would be to re-bundle. Northern Gas Networks suggested the stranded asset issue could be overcome if networks were, once again, responsible for meter provision they could recover the costs over the life of the asset.

1.37. However, others, such as Meter Fit, noted that significant investment had already been made by new entrants in the competitive metering market and there was a clear need to support the competitive market. EDF said that competition in metering has brought some changes and, while the full potential of the resulting benefits has clearly not been realised, the market is progressing to the extent that any unravelling of existing commercial arrangements could be disruptive, complex and expensive.

1.38. Proponents of a regulatory approach were more minded towards mandating in some form, mainly because they believe simply leaving it to the market will either not ever deliver results, or the timeframe for delivery will be too long. This had the advantage of working within the current market structure. The forms of obligations took many shapes. Some, like EA Technology, suggested legislation to require increased frequency of actual reads. Others, such as Ubiquitous, wanted a direct requirement for all meters to be "smart". A mandatory solution was popular with customer interest groups, including Energy Savings Trust, energywatch, and the Citizen Advice Bureau. Many respondents are said careful consideration needed to given to the actual requirements of the Energy Services Directive (ESD).

1.39. Some suggested a "non-regression" obligation where suppliers were prevented from remove a smart meter and replacing it for one of reduced functionality. Sustainability First suggested that all electricity token PPM meters should be replaced by smart PPM meters.

1.40. Capital Meters suggested the introduction of an energy meter obligation where suppliers would be obliged to meet a certain credit amount, with different additional features on meters given different credit ratings. Suppliers not reaching their target could buy out of their obligation, with the funding spread across those that did. They felt this would allow flexibility to Ofgem to accelerate, decelerate or modify the functionality provided to customers, depending upon the value of benefits that emerged in the future.

1.41. Customer ownership of meters was not supported. The Citizens Advice Bureau felt that customers would not be best placed to make an informed decision about owning a meter. The Bayard Group felt that simply allowing customers to own meters would achieve little, and prevent installation economies being realised.

1.42. Some respondees, such as Good Energy, said a trial was necessary to confirm the level of benefits before any mass roll out was undertaken. CR8 felt that there should be work on standardisation, stranding and other issues, but decisions on strategic obligations could be postponed until trial results are available. Those that supported a trial felt it should focus on customer benefits, not the technology. Those not in favour, such as the Bayard Group, believed that waiting for a trail would simply delay benefit realisation.

Question 2: Are there are any barriers preventing the existing arrangements delivering more innovative metering? How could they be overcome?

1.43. Various comments were made. E:ON felt that there were a number of steps required to encourage investment. For RWE npower, avoiding stranded costs was the main barrier, and interoperability was needed to ease this. EDF asked that the pace of rollout not be specified and said that suppliers should be allowed to make their own commercial decisions. In contrast, Scottish Power believed that a competitive metering market prevented the roll-out of smart metering. Similarly, SSE commented that the significant barriers can only be overcome by treating meters as regulatory products of the monopoly network operation.

1.44. Comments on the visual inspection included a call by Iskraemeco to extend the 2 yearly inspections to five years. Others called for clarity on the safety check, with perhaps an relaxation of the rule if a smart meter was installed.

1.45. Some respondents called for the removal of cross subsidies in the gas metering price controls. There was also a call for uncertainty in the market to be removed.

1.46. The EAGA felt that the main barrier to more widespread innovative metering was lack of consumer demand. This could be overcome with an information campaign and changes to the market rules. A number of respondents noted that a programme of customer awareness would facilitate physical entry to homes to change meters. The Energy Savings Trust stated that visibility of consumption data was vital in changing consumer behaviour. National Grid commented that if the benefits were seen as largely environmental, some form of legislation or incentive should be put in place to properly reflect this factor in the business case.

Question 3: Could a large-scale trial significantly improve the evidence of the benefits of smarter metering?[9]

1.47. Overall, there was not overwhelming support for a trial. A number of respondents were concerned that a trial would just delay making a decision on smart meters, even though it might provide additional information. United Utilities noted the trial would need to run for many years to be beneficial, FPAG warned of “analysis paralysis". Even those respondents that did want to see a trial asked that it happen in parallel with other actions.

[9] This question was posed before the Government announced £5 million funding for a trial of smart meters.

1.48. Vulnerable customer groups had different views. While Energy Action Scotland supported a trial, the Energy Savings Trust felt there was enough information to go ahead without one. Of the main suppliers, only SSE felt a trial would improve the evidence base. Centrica felt that instead of a large scale trial, the key missing evidence – environmental benefits - could be obtained from structured information pooled from individual supplier trials. E:ON felt a trial would not provide robust information on how suppliers could leverage the information from smart meters to secure customer action.

1.49. The majority said the technology had already been proved and any trial should be focussed on establishing a customer response. The Environmental Change Institute supported a large scale trial because the UK situation was unique. Sustainability First called for investigations on energy consumption and load shifting for both gas and electricity and trial different forms of customer display and feedback.

Appendix 4 – EEC Trial requirements

1.1. Should suppliers wish to seek EEC accreditation for smart meters and associated feedback devices they will need to provide evidence through trialling their scheme proposals. The following information is required.

Designing a trial

1.2. Trials will need to have a random sample and represent a range of households, in terms of the number of inhabitants and size of the property, to try and identify any trends in behaviour.

1.3. A trial can include those consumers who are interested in adopting innovative metering or changing their behaviour and chose to take part. To ensure a fair trial, other consumers should be included who do not actually request the technology. This is an important distinction to be made to facilitate understanding of the implications for a large-scale roll out of metering to large groups of customers.

1.4. It is also useful to look at a range of customer groups to identify any differences or trends between different households, such as working couples, pensioners or family with a parent and children at home all day.

1.5. A control group will be needed to compare the consumption of participants of the trial with those consumers who do not have the metering device. This data will help to eliminate the effect of weather on consumption and could be used to assess general changes in consumption.

1.6. Trials will need to be split to distinguish the effects of providing the different types of information. For example, if energy efficiency advice or innovative billing is provided alongside smart metering, different groups of customers will need to receive different combinations of information.

1.7. When designing a trial, suppliers should bear in mind how suitable it is to be replicated into a large-scale roll out. The type and frequency of any advice or additional billing information provided will need to be monitored so that it can be replicated or improved in future schemes.

Information to be collected

1.8. The energy savings accredited for metering will be the energy savings resulting from behavioural changes and not those due to the consumer installing measures. Due to the scale of the EEC the majority of energy efficiency measures on the market are already subsidised by suppliers. To avoid double counting across the suppliers' schemes it is necessary to monitor any energy saving measures a

consumer has installed during the trial. Suppliers must identify which insulation, heating, lighting or appliances have been purchased and eliminate the appropriate energy savings from their analysis.

1.9. Suppliers should conduct qualitative analysis of their activity to gauge the types of behavioural changes that consumers are making.

1.10. The other influences on consumer behaviour need to be identified, e.g. how many people live in the house at the start and end of the trial? The weather will also affect consumption but provided there is a control group to make comparisons with, this can be accounted for.

1.11. The properties participating should be surveyed to determine the property type (e.g. semi detached) and size in terms of number of bedrooms. Suppliers should also identify the fuel(s) used in the property.

1.12. The trials should help to identify the duration of behavioural changes. Evidence is needed on whether the energy savings are constant over time, and if not, how they vary.

1.13. Suppliers should also monitor whether a household is in the Priority Group to see if the behavioural changes vary between this group and other households.

Further information

Further information on these requirements can be obtained by emailing the Energy Efficiency team at Ofgem on eec@ofgem.gov.uk.

Appendix 5 – The Authority's Powers and Duties

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

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[10]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[11].

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

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

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[12]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[13]

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

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

- Promote efficiency and economy on the part of those licensed[14] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

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

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

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[15] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[14] or persons authorised by exemptions to carry on any activity.
[15] Council Regulation (EC) 1/2003

Appendix 6 - Glossary

A

AMM - Automated Meter Management.

This describes metering arrangements that have two way communications between a meter and the data collector (electricity) or supplier (gas).

AMR - Automated Meter Reading.

This describes metering arrangements that have one way communication from the meter to the data collector (electricity) or supplier (gas).

B

Balancing and Settlement Code (BSC)

The legal document setting out the rules and governance arrangements for electricity balancing and settlement in Great Britain. All licensed electricity generators and suppliers must sign up to the BSC and other interested parties may also choose to do so. The BSC is overseen by ELEXON.

D

Data aggregation

Involves the aggregation of individual meter read data, and submission to ELEXON for settlement.

Data processing

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

Data retrieval

Relates to obtaining a read (either manually or remotely) from a meter.

Distribution Network Operators (DNOs)

DNOs are ex-Public Electricity Suppliers who came into existence on 1 October 2001. There are 14 DNOs each covering a discrete geographical region of Great Britain. They take electricity off the high voltage transmission system and distribute this over low voltage networks to industrial complexes, offices and homes. DNOs must hold a license and comply with all distribution licence conditions for networks which they own and operate within their own distribution services area. At the moment DNOs are obliged to provide electricity meters at the request of a supplier.

E

ELEXON

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

Emergency control valve (ECV)

The ECV is a valve for shutting off the supply of gas in an emergency, intended for use by a consumer of gas. It is installed at the end of a service or distribution main. The outlet of the ECV terminates, and therefore defines, the end of the gas distribution network.

G

Gas Act Owner (GAO)

The organisation or person responsible for providing installed metering for the measurement of gas consumption, and for maintaining the meter in good working order, as required by the Gas Act 1986 (as amended). The GAO only relates to a meter. A GAO may be a customer, supplier or gas transporter. This will be determined at connection by agreements between these parties. The customer may retain this via the supplier responsibility or may delegate it to the supplier, who in turn may delegate it to the gas transporter. If requested by the supplier, the gas transporter must accept such responsibility for domestic premises.

Gas meter

A measuring instrument that records the volume of gas passing through it.

Gas transporter

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

I

Interval metering plus AMM

This describes more advanced metering arrangements which not only have two way communication but also the capability to store information more frequently.

I&C

Industrial and Commercial market.

M

Meter Asset Manager (MAM)

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

Meter Asset Manager's Code of Practice

The Code of Practice for Gas Meter Asset Managers (MAMCoP) applies to natural gas only. The MAMCoP amplifies the duties of a MAM. It applies to independent Gas Transporters undertaking meter asset management services, as part of a bundled gas transportation business, or MAMs who work on behalf of a gas customer, gas supplier or gas transporter to manage primary meter installations connected to the Network as defined by the Gas Safety (Management) Regulations.

Meter Asset Provider (MAP)

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

Meter operation

Covers all work associated with installing and maintaining meters.

Meter Operator (MOp)

In electricity a MOp is responsible for the installation, commissioning, testing, repair, maintenance, removal and replacement of electricity metering equipment as defined in Section 1B of standard condition 36B of the distribution licence.

Meter Owner

The person owning a gas meter and/or a meter installation.

Meter Point Reference Number (MPRN)

A unique identifier for the point at which a meter is, has been, or will be connected to the gas network.

Meter provision

Relates solely to making meters available for installation.

Meter pressure regulator

A device located in close proximity to a primary meter which is solely to control the pressure of the gas within the measuring instrument and/or installation pipework and is not separated from the measurement device by buried pipework.

Meter Reading or data services

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

Meter-Related Services

Means the provision, installation, commissioning, inspection, repairing, alteration, repositioning, removal, renewal and maintenance of the whole or part of an installed gas as defined in Section M, paragraph 1.2 of the Network Code of National Grid Gas plc (formerly Transco plc).

Metering Services

The provision to a customer of a meter of an accurate type. It comprises of meter provision and meter operation.

N

National Grid Gas plc (NGG) (formerly Transco plc)

A gas transporter which transports gas through its networks on behalf of a shipper. NGG provides, installs and maintains the vast majority of domestic gas meters in this country.

National Grid Metering Limited (formerly Transco Metering Services Limited)

A wholly owned subsidiary of NGG responsible for discharging NGG's metering obligations.

P

Prepayment meters

Prepayment meters currently use electronic tokens, keys or cards. The customer therefore needs to be provided with a network of outlets where tokens can be purchased, or cards and keys can be charged up. This network of outlets needs to be linked to a payment settlement system for suppliers.

Appendix 7 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

- Does the report adequately reflect your views? If not, why not?
- Does the report offer a clear explanation as to why not all the views offered had been taken forward?
- Did the report offer a clear explanation and justification for the decision? If not, how could this information have been better presented?
- Do you have any comments about the overall tone and content of the report?
- Was the report easy to read and understand, could it have been better written?
- Please add any further comments?

1.2. Please send your comments to:

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