



**ENERGY METERING**

**A CONSULTATION ON  
SMART METERING FOR  
ELECTRICITY AND GAS**

**MAY 2009**



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# Executive Summary

1. Smart electricity and gas meters provide accurate real time information on energy consumption. The Government believes smart meters will both change our energy habits in the short term and provide an essential stepping stone to smart grids in the future. They will provide a step-change in the information available to consumers helping them to save money on their bills and to reduce their carbon emissions. For consumers there will be no more estimated bills or staying in for home readings; they will be able to manage energy use more cost-effectively and there should be easier switching between suppliers. And suppliers will be able to offer a greater range of tariff packages including for off-peak energy. Smart meters will also be a platform for the major expansion we want to see, for example, in the use of new and renewable energy sources, home micro-generation and electric vehicles in the future.

2. This consultation document contains proposals relating to electricity and gas meters:

- in domestic households; and
- at small and medium non-domestic (business and public sector) sites.

This consultation applies to Great Britain only.

3. In relation to domestic metering, the Government announced in October 2008 that it intends to mandate electricity and gas smart meters for all households<sup>1</sup>. This consultation document makes proposals in two areas fundamental to rolling out smart meters to domestic households: the delivery model or market arrangements for installing and on-going management of smart meters and smart meter functionality.

4. In relation to non-domestic metering, the Government issued a consultation on advanced/smart metering for small and medium sized (commercial and public sector) sites in Great Britain in July 2008. Building on the responses to that consultation, the Government is now making specific proposals in relation to smart/advanced metering.

5. **Section 1** of this document provides an introduction to the Government's proposals and discusses the policy context.

6. **Section 2** focuses on the delivery model or market arrangements for delivering smart meters to households. Subject to responses to this consultation, the Government's planned approach is for one in which:

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<sup>1</sup> House of Lords Hansard, 28 October 2008, Column 1516

- gas and electricity supply companies would have responsibility for provision, installation and ongoing management of smart meters; and
- a single national communications provider would be appointed centrally to provide communications services for all smart meters across Great Britain.

7. The Government believes that strong positive engagement among local communities will be particularly powerful in generating the necessary awareness, enthusiasm and take-up of the benefits from smart meters. We are therefore seeking views on how to ensure that the scope for local co-ordination of the roll out is properly realised within this model. In addition the Government invites views on whether any other form of customer prioritisation should be considered.

8. The Government also intends to do further work during the consultation period to review whether the electricity and gas distribution network businesses should have a greater role in relation to smart meters, and invites views on this possibility.

9. This section also discusses the position in relation to old meters which will be removed before the end of their economic life.

10. **Section 3** sets out the Government's proposals for the high-level functional requirements for the domestic smart metering system, as a basis for the detailed work which will need to be done subsequently to set common minimum technical specifications. Establishing this framework at the outset is important in order to ensure the metering system is capable of delivering the full range of benefits identified in our impact assessment, and as a starting point for achieving meter interoperability.

11. The Government also invites views on the type of consumption information that should be provided to consumers to maximise their engagement, and on the Government's expectation that a standalone real-time display would be provided with a smart meter to ensure the full environmental and energy-saving benefits of smart meters are delivered.

12. **Section 4** of the document discusses metering in medium and smaller non-domestic sites (around 2.2 million electricity meters and 1.5 million gas meters). In industry terms they consist of sites within electricity profile classes 3 and 4, and all non-domestic gas sites with annual consumption of less than 732 MWh. Sites with consumption below these levels are treated as being provided for within the domestic smart meter arrangements.

13. The Government published an initial consultation on these issues in July 2008. In this new consultation document the Government now makes specific proposals for the introduction of new metering requirements in this sector.

14. **Section 5** discusses the programme that will be needed to implement a smart metering roll out in Great Britain. The preparation programme will be

shaped by final decisions on the issues covered by this consultation document. However, this section discusses next steps and notes a range of preliminary activities related to programme preparation that can be taken forward in parallel with this consultation.

15. Alongside this consultation document, the Government is publishing a number of **related documents**: a Consultation Impact Assessment of a smart metering roll out for domestic consumers<sup>2</sup>; a Consultation Impact Assessment of a roll out of smart and advanced meters for small and medium-sized businesses and public sector sites<sup>3</sup>; a report by Baringa Partners on risk and optimism bias<sup>4</sup>; and a further report by Baringa Partners defining and evaluating different market models for a smart meter roll out<sup>5</sup>.

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<sup>2</sup> Impact Assessment of a GB-wide smart meter roll out for the domestic sector sites, May 2009, this can be found at [http://www.decc.gov.uk/en/content/cms/consultations/smart\\_metering/smart\\_metering.aspx](http://www.decc.gov.uk/en/content/cms/consultations/smart_metering/smart_metering.aspx)

<sup>3</sup> Impact Assessment of smart / advanced metering for SMEs and public sector sites, May 2009, this can be found at [http://www.decc.gov.uk/en/content/cms/consultations/smart\\_metering/smart\\_metering.aspx](http://www.decc.gov.uk/en/content/cms/consultations/smart_metering/smart_metering.aspx)

<sup>4</sup> Risk and Optimism Bias Report, Baringa Partners, May 2009, this can be found at this can be found at [http://www.decc.gov.uk/en/content/cms/consultations/smart\\_metering/smart\\_metering.aspx](http://www.decc.gov.uk/en/content/cms/consultations/smart_metering/smart_metering.aspx)

<sup>5</sup> Market Model Definition and Evaluation Report , Baringa Partners, May 2009, this can be found at this can be found at [http://www.decc.gov.uk/en/content/cms/consultations/smart\\_metering/smart\\_metering.aspx](http://www.decc.gov.uk/en/content/cms/consultations/smart_metering/smart_metering.aspx)



# How to Respond

This consultation is relevant to: suppliers of gas and electricity, consumers of gas and electricity and their representatives, network operators, gas transporters, independent gas transporters, electricity and gas meter manufacturers, providers and operators, trade unions with membership in the gas and electricity supply business, environmental and energy efficiency organisations, energy service companies, display device manufacturers, tele/radio-communications businesses and other stakeholders with interest in the gas and electricity supply business.

The closing date for responses is Monday 3 August 2009.

When responding please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of an organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

Email responses should be submitted to: [smartmetering@decc.gsi.gov.uk](mailto:smartmetering@decc.gsi.gov.uk). Hard copy responses can be sent by post to:

Phil Nash  
Smart Metering Team  
Department of Energy and Climate Change  
Area E, 1<sup>st</sup> Floor  
3 Whitehall Place  
London SW1A 2HD  
Telephone: until 31st May 2009: 020 7215 5049; from 1<sup>st</sup> June: 0300 068 5127; or via the DECC switchboard on 0300 0604000 (standard national rate)

## Additional Copies

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## Confidentiality & Data Protection

Individual responses and information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004). If you want other information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

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

## Help with Queries

Questions about the policy issues raised in the document can be addressed to:

Rob Thornes  
Smart Metering Team  
Department of Energy and Climate Change  
Area E, 1<sup>st</sup> Floor  
3 Whitehall Place  
London SW1A 2HD  
Telephone: until 31st May 2009: 020 7215 5049; from 1<sup>st</sup> June: 0300 068 5128; or  
via the DECC switchboard on 0300 0604000 (standard national rate)

E-mail: [smartmetering@decc.gsi.gov.uk](mailto:smartmetering@decc.gsi.gov.uk)

If you have comments or complaints about the way this consultation has been conducted, these should be sent to:

Marjorie Addo, Consultation Co-ordinator, Department of Energy & Climate Change,  
Area 7C, Nobel House, 17 Smith Square, London SW1P 3JR  
Email: [consultation.coordinator@decc.gsi.gov.uk](mailto:consultation.coordinator@decc.gsi.gov.uk)

A copy of the Code of practice on Consultations can be found at  
[www.berr.gov.uk/files/file47158.pdf](http://www.berr.gov.uk/files/file47158.pdf)

# Summary of Consultation Questions

## Questions from Section 2: Proposals for the Domestic Sector: Delivery Model

### Questions

- Q1** Do you have any comments on the Government's preference for the Central Communications model?
- Q2** Do you have any comments on the analysis and conclusions on the delivery model contained in this consultation document, the reports prepared by Baringa Partners, or the Consultation Impact Assessment?
- Q3** Do you agree the Central Communications model effectively facilitates 'end to end' management of the electricity networks system needed for smart grids?
- Q4** 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?
- Q5** Should any particular policy considerations be taken into account in considering whether there should be priority target groups for early deployment of smart meters?
- Q6** Do you have any comments on the merits of alternative approaches under which electricity and gas network businesses take on responsibility for aspects of smart metering?

## Questions from Section 3: Proposals for the Domestic Sector: Functionality

- Q7** Do you agree with the functionality proposed for electricity meters? Please explain your reasons and if possible give evidence for your comments.
- Q8** 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.
- Q9** Do you agree with the functionality proposed for gas meters? Please explain your reasons and if possible give evidence for your comments.
- Q10** 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?
- Q11** Are there any additional maintenance, administrative or management costs associated with having all gas smart meters with a valve?

**Q12** Do you agree with the Government's position that a standalone display should be provided with a smart meter?

**Q13** 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)?

**Q14** Do you have comments regarding the accessibility of meters/display units for particular consumers (e.g. vulnerable consumers such as the disabled, partially sighted/blind)?

### **Questions from Section 4: Proposals for the Non-Domestic Sector**

**Q15** Do you agree with the Government's proposal to extend to the small and medium non-domestic sector the minimum functionality that we will require for smart meters in the domestic sector, with certain exceptions to allow for individual consumer requirements?

**Q16** Do you have any comments on how such a requirement, and the exceptions to it, should be framed?

**Q17** 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?

**Q18** Do you have any comments on the implications of the Government's proposed approach in this sector for the future development of smart grids?

**Q19** Do you have any comments on the revised Consultation Impact Assessment for this sector?

**Q20** Do you have any comments on the implications for the non-domestic sector of the options identified for a domestic delivery model?

**Q21** 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?

### **Question from Section 5: Other Issues and Next Steps**

**Q22** Has 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?

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

# Section 1: Introduction

1.1 Smart electricity and gas meters provide accurate real time information on energy consumption. The Government believes smart meters will both change our energy habits in the short term and provide an essential stepping stone to smart grids in the future. They will provide a step-change in the information available to consumers helping them to save money on their bills and to reduce their carbon emissions. For consumers there will be no more estimated bills or staying in for home readings; they will be able to manage energy use more cost-effectively and there should be easier switching between suppliers. And suppliers will be able to offer a greater range of tariff packages including for off-peak energy. Smart meters will also be a platform for the major expansion we want to see, for example, in the use of new and renewable energy sources, home micro-generation and electric vehicles in the future.

## Smart Meters and Smart Grids

1.2 The Government announced in October 2008 that it intends to mandate smart meters for all households<sup>6</sup>. Smart meters will play an important role in our transition to a low-carbon economy, and in helping us meet some of the long term challenges we face in ensuring affordable, secure and sustainable energy. They will empower consumers. And they are a vital early step in the development of the smart grids of the future. Consumers will have more control over their own energy use and carbon emissions, and important new opportunities will be opened up for energy retail services, infrastructure management and renewable energy generation. In short, smart meters will become a cornerstone of our efficient management of energy resources as a nation and as individuals in the future.

1.3 As consumers we will be more aware of how we are using our energy and we will be better equipped to manage it efficiently. We will be better able to see real-time information on our energy consumption and what it costs. Energy suppliers will be able to offer improved services, such as a wider range of tariffs and incentive packages, to encourage more efficient and economical use of energy. We can anticipate marked improvements in the quality of service to customers. We will have more accurate bills, and there will be no more home readings. There should be fewer account errors. Switching between suppliers should become quicker and smoother.

1.4 As a key step towards future smart grids, smart meters will offer new opportunities for the efficient management of our energy distribution networks, and the exploitation of new and renewable energy generation. The new consumption data smart meters will make available will help network operators to make better informed investment decisions. In the longer term, smart meters will help to enable new ways of actively managing energy use in homes and across the networks, which could, for example, help the system to deal with the intermittent character of significant new renewable energy generation as we move towards our 2020 renewables targets. Smart meters, will allow exported energy to be measured, and therefore support the development of microgeneration in the home.

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<sup>6</sup> House of Lords Hansard, 28 October 2008, Column 1516

1.5 Smart meters combined with time of use tariffs will also enable the grid to support increasing numbers of electric and plug-in hybrid vehicles. Greater use of ultra-low emission vehicles, whether all-electric (EVs) or plug-in hybrid (PHEVs) provides an opportunity to reduce emissions of air pollutants and greenhouse gases from road transport, while maintaining the personal freedom of mobility that we all enjoy. By way of example, an electric car would emit 40% less CO<sub>2</sub> over its entire lifetime than a comparable family petrol car. EVs and PHEVs are likely to cost more than their conventional counterparts, so the Government has allocated £250 million to create a system of consumer incentives to build the market for these vehicles. A study by Cenex/Arup<sup>7</sup> showed that the use of smart meters and time of use tariffs will prevent deleterious grid impacts when large scale uptake of electric vehicles (ie more than 5% of the vehicle fleet) occurs.

1.6 So smart meters will help us to meet the strategic challenge of managing the changing nature of energy generation and use. Today's electricity networks carry power from large, mostly centralised generation, across the high voltage transmission system and down through largely passive distribution networks to our homes and businesses. These passive networks have proved to be very reliable, but will need to change in order to meet the challenges that will arise from changes in the way we will generate and use our energy over the next decade and beyond.

1.7 We will see our energy mix changing to include much more renewable generation e.g. wind, solar, biomass with increasing amounts of distributed and micro-generation. Looking beyond 2020 we can also expect greater electrification of the heat and transport sectors.

1.8 These changes will present new challenges for the design and operation of our networks, requiring them to evolve over time. We are well placed to make this transition. The Electricity Networks Strategy Group has already set out its vision<sup>8</sup> for the changes need to the transmission networks to facilitate the achievement of our energy and climate change goals to 2020. The introduction of smart meters is another important step towards smarter grid management.

1.9 The roll out of smart meters will be a major undertaking, involving visits to over 25 million households, to replace something approaching 50 million meters. The Government recognises that many policy, technical and operational issues will need to be worked through before a final timetable can be settled. However we have set an indicative target of the end of 2020 for completion of the roll out.

1.10 Overall, we estimate rolling out smart meters to all domestic households by end 2020 will deliver net benefits between £2.5bn and £3.6bn over the next 20 years<sup>9</sup>, and a reduction in UK carbon emissions of about 2.6 million tonnes per year by 2020<sup>10</sup>.

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<sup>7</sup> Investigation into the Scope for the Transport Sector to Switch to Electric Vehicles and Plug-in Hybrid Vehicles, 2008  
<http://www.berr.gov.uk/files/file48653.pdf>

<sup>8</sup> Our Electricity Transmission Network: A Vision for 2020 – A Report by the Electricity Networks Strategy Group  
[http://www.ensg.gov.uk/assets/1696-01-ensg\\_vision2020.pdf](http://www.ensg.gov.uk/assets/1696-01-ensg_vision2020.pdf)

<sup>9</sup> These numbers are taken from the central scenarios in the Consultation Impact Assessment published alongside this document, Impact Assessment of a GB-wide smart meter roll out for the domestic sector sites, May 2009. See footnote 2 for the web address

1.11 Smart and advanced metering at business sites also has a very important part to play. For this reason the Government has already mandated new advanced metering functionality in the larger business sector, and we are now proposing changes also for the small and medium sector. Whilst the number of meters involved is obviously much smaller (about 3.7 million, compared to about 47 million domestic meters), the average quantity of energy consumed per meter is naturally much higher. We estimate rolling out smart/advanced meters to small and medium sized sites, on the same timescale as domestic meters, will yield UK carbon savings of about 20 million tonnes over ten years, and net benefits of around £1.75bn overall<sup>11</sup>.

## About this Consultation Document

1.12 This consultation document contains proposals relating to electricity and gas meters:

- in domestic households; and
- at small and medium non-domestic (business and public sector) sites.

1.13 This consultation applies to Great Britain only. Responsibility for energy markets in Northern Ireland lies with the Department of Enterprise, Trade and Investment.

1.14 In relation to domestic metering, the Government has previously announced its decision that smart meters should be rolled out to all households. This will require mandating by Government, and a major national implementation programme. This consultation document makes proposals in two areas fundamental to the future framework for metering. Decisions on these proposals will therefore provide an essential framework for the preparation programme for the roll out, and a platform for more detailed design and implementation work. These are proposals on:

- the delivery model – the industry/market arrangements for the installation and on-going management of smart meters, and related communications services; and
- meter functionality – the minimum functions which should be required of smart meters, described at a high level.

1.15 In relation to non-domestic metering, the Government has recently introduced new requirements on metering for larger business sites. This consultation document now makes proposals for the introduction of new requirements for metering at small and medium sized sites.

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<sup>10</sup> The Consultation Impact Assessment indicates that by 2020 the roll out programme will save 1.6 million tonnes of global CO<sub>2</sub> per annum through a reduction in gas demand; and EU ETS allowances equivalent to allowances for 1 million tonnes of CO<sub>2</sub> per annum through electricity savings.

<sup>11</sup> These numbers are taken from the central scenarios in the Consultation Impact Assessment published alongside this document. See footnote 2 for the web address.

## Implementation

1.16 The roll out of smart meters will involve a major national change programme presenting many technical and management challenges. No other country in the world has implemented an electricity and gas smart meter roll out on this scale.

1.17 There are exemplars on a smaller scale elsewhere in the world from which we can learn. But Britain's programme will be bigger and more comprehensive than any so far undertaken. Government, regulators and industry will need to work together, and with the wider community of stakeholders, to ensure the roll out is effectively planned, prepared and delivered.

1.18 This consultation is an important step. Final decisions on the proposals it sets out will provide the basis for the detailed design and then implementation work required for roll out. The consultation document has been prepared on the basis of detailed analytical work and discussions with a wide range of stakeholders undertaken over recent months. The document now seeks comments on the basis of specific proposals.

1.19 The Government will announce final decisions on these proposals, and set out further plans for the implementation programme, following responses to the consultation. At the same time, there is a range of more detailed policy and technical work which may sensibly be taken forward in parallel with the consultation period, and on which the Department of Energy and Climate Change will work with Ofgem and other stakeholders. Section 5 of this consultation document discusses next steps over the next few months.

## Policy Context

1.20 In August 2007 the Government published its consultation, "Energy Billing and Metering – Changing Consumer Behaviour".<sup>12</sup> Among other things, the consultation sought views on the smart electricity and gas metering in the domestic and small and medium business sectors. The consultation also discussed the case for the provision of advanced metering for larger non-domestic consumers and sought views on how it could be delivered to the sector, and on draft licence modifications to implement the provision.

1.21 The Government published a response to the consultation in April 2008.<sup>13</sup> For domestic customers, the response noted that, whilst there was widespread support among respondents for a full roll-out of smart meters, the economic case for mandating a roll out for all domestic consumers – as detailed in its consultation impact assessment - was questionable. However, given the complexity of the issues, the number of variables involved and the fact that a number of broad, intangible benefits had been identified, the Government said it wished to discuss its impact assessment work further with stakeholders before taking final decisions. A consultation impact

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<sup>12</sup> Energy Billing and Metering: Changing Consumer Behaviour – A Consultation on the Policies contained in the Energy White Paper, [www.berr.gov.uk/files/file40456.pdf](http://www.berr.gov.uk/files/file40456.pdf)

<sup>13</sup> Energy Billing and Metering: Changing Customer Behaviour – Government Response to a Consultation, [www.berr.gov.uk/files/file45996.pdf](http://www.berr.gov.uk/files/file45996.pdf)

assessment for domestic customers was therefore published in parallel with the Government Response and stakeholder comments requested. For small non-domestic customers, the Government Response noted there was a reasonably positive case for roll-out and said it would consult to obtain further evidence.

1.22 For larger non-domestic customers, given the positive case for roll-out and responses to the August 2007 consultation, the Government announced as part of the Budget 2008 that it would move ahead with its proposals. Following a short consultation on the licence modifications, a requirement for advanced metering for consumers in certain larger consumption categories entered into force on 6<sup>th</sup> April 2009.

1.23 In July 2008 the Government published a consultation document specifically on smart and advanced metering for small and medium non-domestic sites<sup>14</sup>. The Government's proposals in response to that consultation are set out in Section 4 of this document.

1.24 On domestic smart metering, further policy and development has included:

- further work on the smart metering economic impact assessment<sup>15</sup> based on comments from stakeholders;
- work commissioned from Baringa Partners to evaluate delivery models for domestic smart meters and to review the treatment of risk and optimism bias in the Consultation Impact Assessment. Baringa's reports on both these projects are being published alongside this consultation document;
- an assessment of policy and cost-benefit issues linked to smart meter functionality;
- a workshop on wide area network communications for smart meters; and
- a workshop on issues related to displays and provision of information from meters

1.25 Powers were included in the Energy Act 2008 to enable the Secretary of State to mandate roll-out of smart meters to specific customer segments. On 28 October 2008, in Parliamentary proceedings on the Energy Bill, the Government announced its intention to mandate smart meters for the domestic sector.

1.26 Smart metering policy clearly sits, and must develop, within the Government's wider policies and strategies for moving to a low carbon Britain and ensuring secure, affordable and sustainable energy. So these wider objectives must be properly considered as we develop all aspects of the implementation programme, ranging from technical specifications for metering and communications, through market design issues, to operational delivery issues.

1.27 In particular, we will want to ensure work coherently within the overall strategy for energy efficiency measures. The Government's Heat and Energy Saving

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<sup>14</sup> Consultation on smart and advanced metering for small and medium sized businesses and sites, and other non-domestic customers, July 2008, [www.berr.gov.uk/files/file47191.pdf](http://www.berr.gov.uk/files/file47191.pdf)

<sup>15</sup> This refers back to the Consultation Impact Assessment of Smart Metering Roll Out for Domestic Customers and Small Businesses published in April 2008 [www.berr.gov.uk/files/file45794.pdf](http://www.berr.gov.uk/files/file45794.pdf). A revised Consultation Impact Assessment has been issued in parallel with this consultation document – see footnote 2.

Strategy<sup>16</sup> consultation was published in February 2009. This sets out the Government's vision up to 2020 and beyond and aims for emissions from existing buildings to be approaching zero by 2050. It seeks views on a range of policies to increase the scope and ambition of energy saving measures, as well as decarbonising the generation and supply of heat. The aims are to help reduce the UK's CO<sub>2</sub> annual emissions by up to 44 million tonnes of CO<sub>2</sub> in 2020 - the equivalent of a 30% reduction in emissions from households compared to 2006. This consultation recognises the role that smart meters can play in this agenda in terms of helping people to change their behaviour and take action on energy use, as well as supporting the introduction of new renewable generation.

1.28 We will also want to draw on the emerging results from the Energy Demand Research Project (EDRP). The EDRP is enabling the Government, energy suppliers and others to test out through a variety of interventions how energy customers respond to better information about their consumption. Around 50,000 households across Great Britain are participating, including 18,000 households with smart meters and 8,000 more receiving display devices for their existing meters. The results will help us understand more about the different interventions, in turn helping with targeting and policy design.

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<sup>16</sup> Heat and Energy Saving Strategy, 2009 [http://hes.decc.gov.uk/consultation/consultation\\_summary](http://hes.decc.gov.uk/consultation/consultation_summary)

# Section 2: Proposals for the Domestic Sector: Delivery Model

## Introduction

2.1 Smart meters and the necessary new communications services to support them will be rolled out into a complex industry and market environment. How that roll out is organised will determine the scale and nature of the change programme required, and be an important factor influencing the shape of the energy supply industry and markets for the future.

2.2 The Government has carefully analysed a range of alternative “delivery models”, and we are publishing alongside this consultation document a detailed option appraisal of three contrasting options, conducted on our behalf by Baringa Partners<sup>17</sup>, together with a revised Consultation Impact Assessment<sup>18</sup>. On the basis of this work, the Government is now proposing a preferred model. We invite views on this preferred model; and on the underpinning analysis set out in this consultation document, in the report by Baringa Partners and in the Government’s Consultation Impact Assessment.

## Summary of the Proposals

2.3 The Government has undertaken a detailed appraisal of three “delivery models” - alternative delivery models for the arrangement of responsibilities for smart metering and related communications services. A full analysis of these options was conducted for the Government by Baringa Partners (formerly The Structure Group).

2.4 On the basis of this analysis, the Government’s current preferred approach is a model, in which:

- gas and electricity supply companies will have responsibility for the provision of smart meters (installation and ongoing management); and
- a single provider will be appointed centrally to provide communications services to and from meters.

2.5 Within this approach, the Government is keen to ensure that the scope for local co-ordination of the roll out is properly realised.

2.6 We also intend to do further work during the consultation period on the possibility of the network businesses assuming responsibilities in relation to smart metering roll out which is not envisaged under the three models appraised in the Baringa Report.

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<sup>17</sup> See footnote 5.

<sup>18</sup> See footnote 2.

## Discussion of Options

2.7 In July 2008, the Government commissioned Baringa Partners to identify and evaluate alternative delivery models. Their work built on earlier analysis presented by the Government in an Impact Assessment published in April 2008<sup>19</sup> (informed by work conducted for the Government by Mott McDonald<sup>20</sup>) to assess the costs and benefits of a smart meter roll out. A wide range of stakeholders were actively engaged in this process, and the Government is grateful to all those who have participated to date. Three leading options were identified and evaluated in detail. These options are:

- Competitive model – this option is based on the existing metering market model where electricity and gas suppliers are free to determine their own deployment strategy, choose the metering services they require, and have the ability to contract the management of such services. Suppliers would remain responsible for all metering services including communications to and from meters;
- Central Communications model - this option would introduce a new market 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;
- 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.

2.8 More detail on each of the models can be found in Baringa Partners' report which has been published in parallel with this consultation<sup>21</sup>. These models were developed through workshops and other discussions with stakeholders, and are described in more detail in the report prepared by Baringa Partners. However, to explain for the avoidance of doubt, once the Government has reached a decision on the delivery model option at this high level, further work will be required to develop a detailed design. In so doing it may be appropriate to revise some of the more detailed assumptions described in the report as to how the chosen model might operate. This detailed market design work will be part of the implementation work programme once high-level decisions on delivery model have been taken.

2.9 The analysis conducted by Baringa Partners evaluated the three options against 5 criteria:

- economic impact;
- customer impact;
- governance and industry;

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<sup>19</sup> See footnote 14.

<sup>20</sup> Appraisal of Costs and Benefits of Roll Out Options, Mott McDonald, [www.berr.gov.uk/files/file45997.pdf](http://www.berr.gov.uk/files/file45997.pdf)

<sup>21</sup> See footnote 5,

- competition;
- innovation and technology.

2.10 The evaluation report prepared by Baringa Partners is being published in parallel with this consultation document<sup>22</sup>. A further report by Baringa Partners, on the optimism bias and risk factors employed, is also being published in parallel<sup>23</sup>.

2.11 In summary, the evaluation report finds that that there is no simple choice in terms of the market model that best meets all evaluation criteria, but that:

- the Fully Centralised model offers the lowest cost of rollout to end 2020 through the most efficient deployment strategy and avoidance of asset and communications duplication. However, there are also a number of challenges and risks associated in particular with designing and executing tenders on this scale, but also the subsequent regulation of the monopoly providers. Gross benefits are also lowest in this model primarily due to the longer set up period required;
- the Competitive model avoids many of these difficulties. In particular it is quickest to deployment and therefore delivers highest gross benefits. However, this model does have the potential to add complexity to current industry processes and relies on establishing technical and commercial interoperability, the feasibility of which is uncertain. In addition, the higher costs associated with this model lead to a net benefit over the period 2008-2030 around £1bn lower than in the Central Communications model or the Fully Centralised model;
- the Central Communications model delivers the highest overall net benefit - significantly higher than the Competitive model and marginally higher than the Fully Centralised model. It also retains many of the advantages of the Competitive model such as supplier flexibility over the customer proposition, deployment strategy and differentiated service offerings. Competitive pressures for metering services are retained in this model, but with the advantage that with standardised communications there is less reliance on establishing technical interoperability standards upfront;
- whilst the Central Communications model would experience some of the same challenges faced in the Fully Centralised model in establishing central service providers, metering itself would remain a competitive activity and there would be less disruption to existing business models;
- like the Fully Centralised model, the Central Communications model offers the opportunity for future industry simplification through centralised data management. A single access point for data will simplify data access for the full range of industry parties (suppliers, network businesses, potentially energy service companies) so that the full range of benefits can be delivered.

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<sup>22</sup> See footnote 5.

<sup>23</sup> See footnote 4.

2.12 On the basis of their analysis, Baringa Partners concluded that the Central Communications model should be taken forward into the detailed design phase. Subject to considering the responses to this consultation document, the Government broadly accepts the analysis and agrees with the conclusions contained in the evaluation report. Subject to this consultation, therefore, the Government's plan is to take the Central Communications model forward to the next stage of design and development.

2.13 In the Government's view the most significant arguments against the Competitive model are the high costs and therefore relatively low net benefits; and the complexity likely to result from the lack of centrally managed communications services. We are also concerned that a roll out of communications led by individual suppliers may prove an obstacle to the development of a smart grid in the longer term. In the Government's view again, the strongest arguments against the Fully Centralised model are particularly the length of preparation time required; the degree of risk arising from the scale and complexity of the change programme; and the lack of competitive pressures on metering services to ensure a high quality of customer service.

2.14 In the Government's view, the Central Communications model offers the key twin advantages of engaging the market incentives on the energy retailers to drive service quality and innovation; together with centrally co-ordinated communications services. We find the arguments in favour of retaining the energy supply companies' responsibility for metering services persuasive. This should provide a platform to support innovation and competition between the supply companies, leading to more choice for consumers in metering and other products and services. The Government also considers that the arguments in favour of centralising the delivery of smart metering communications are strong. Effective use of the data smart meters can provide is the crux of the benefits case. Central communications will underpin a faster, more efficient supplier switching process, reduce the interoperability challenge and provide a firmer basis for moving to smart grids in the longer term.

2.15 Data access and data protection will be central to the issues to be considered under the preparation programme. Clearly the right level of data access within the industry will be important for the full benefits of smart metering for consumers and ultimately for smart grid management are to be realised. Equally, the right safeguards must be in place to protect consumers from improper access and misuse of data. Among other things, Privacy Impact assessments and Data Protection Act Compliance Checks will be required at appropriate stages of the project, and the detailed design and delivery of the project as a whole will be taken forward in conjunction with the Ministry of Justice and the Information Commissioner as appropriate.

## Local Co-ordination of Roll Out

2.16 The full benefits of smart meters will only be secured if consumers understand and exploit the new information and opportunities which they offer. The way the installation programme is run will crucially affect the enthusiasm with which the new technology is received by householders. The roll out programme also offers important opportunities to raise householders' general awareness and take up of energy efficiency measures. The energy supply companies, the Government, local bodies and others will all have important roles to play in ensuring the benefits of smart meters are understood and exploited. In developing our approach to delivery, we will also need to consider how we can best coordinate activity with delivery mechanisms for other low carbon heating and energy saving measures which may come forward through the development of the heat and energy savings strategy.

2.17 The Government 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 ordering roll out by local areas as far as possible, so that as many people as possible in local communities receive their new meters around the same time. Such co-ordination will also greatly facilitate locally targeted marketing activity, whether by suppliers, Government or under local initiatives.

2.18 Maximising local co-ordination of installations is more challenging under the Central Communications model than under the Fully Centralised model. However, the Government believes it is important to address these challenges so that the scope for local co-ordination is properly realised. The Government could, for example, set requirements on suppliers designed to optimise local co-ordination. We therefore invite views on whether there are specific measures which should be adopted by Government to maximise co-ordination of deployment at local level.

### Questions

**Q1** Do you have any comments on the Government's preference for the Central Communications model?

**Q2** Do you have any comments on the analysis and conclusions on the delivery model contained in this consultation document, the reports prepared by Baringa Partners, or the Consultation Impact Assessment?

**Q3** Do you agree the Central Communications model effectively facilitates 'end to end' management of the electricity networks system needed for smart grids?

**Q4** 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?

## Priorities for Early Roll Out

2.19 Local co-ordination of installations represents a form of customer prioritisation. Different forms of prioritisation might be envisaged on the basis of operational efficiency or wider policy objectives, for example by rolling out smart meters to vulnerable customers early on. Any such decisions would need to be carefully balanced with other priorities and with economic and market criteria so as not to undermine the net benefits of the programme. However, the Government invites views on whether other policy considerations should influence the order of smart meter roll out.

### Question

**Q5** Should any particular policy considerations be taken into account in considering whether there should be priority target groups for early deployment of smart meters?

## Distribution Network Model

2.20 The Government has previously considered, and some stakeholders have commented on, the possibility of an approach where the electricity and gas network distribution businesses took responsibility for at least some aspects of smart metering. There are potentially significant drawbacks to such approaches including, in particular, a lack of competitive pressure on metering provision and related services, as well as the obstacles to co-ordinating deployment and customer service across gas and electricity metering. There are also concerns that re-regulation of metering would be particularly disruptive of the existing market resulting in delay to initial deployment. The Fully Centralised model, as defined above, was therefore taken forward to detailed evaluation in preference. However, further arguments have been advanced as to possible advantages in the network distribution businesses assuming new responsibilities under the smart meter roll-out, particularly in relation to the development of future smart grids.

2.21 So, before reaching final conclusions on the delivery model at the end of this consultation period, the Government plans to do some further work to review whether the electricity and gas distribution network businesses should have a greater role in relation to smart meters than assumed in the three delivery models as they are described in the Baringa report. As part of this work we will give further consideration to the relationship between the future development of smart grids and relevant aspects of metering (e.g. meter procurement and the communications infrastructure). If you would like to be kept in touch with this work as it develops please notify us at [smartmetering@decc.gsi.gov.uk](mailto:smartmetering@decc.gsi.gov.uk)

### Question

**Q6** Do you have any comments on the merits of alternative approaches under which electricity and gas network businesses take on responsibility for aspects of smart metering?

## Stranded Assets

2.22 Setting an accelerated deadline for a smart meter roll out will cause a certain proportion of electricity and gas meters to be removed before the end of their normal economic life. This will create costs for either the owner of the asset or suppliers, depending on the contractual arrangements in place. On the basis of our impact assessment work, and analysis of the current market by Ofgem, we estimate that a deadline for a domestic roll out of end 2020 could create costs associated with early meter removal of around £750m<sup>24</sup>. Costs associated with early meter removal will vary depending on the delivery model chosen (a shorter roll out period will result in higher costs than a longer one). The costs will not be spread evenly amongst the different industry parties affected, namely suppliers, distribution network operators, gas transporters, independent gas transporters, gas distribution networks and commercial meter operators.

2.23 Various stakeholders have argued that Government should introduce a compensation fund to provide full or partial compensation to the party bearing the cost of early meter removal as a result of a smart meter roll out. Such a fund would be funded via an industry levy and the costs would eventually be passed through to the consumer.

2.24 The Government accepts that there will be costs associated with the early removal of meters as a result of a smart meter mandate. We also accept that these costs will impact differentially on the relevant parties. However, the introduction of a compensation fund would be a major intervention in the market and would require very clear justification, and evidence that competition would be materially distorted to the detriment of consumers.

2.25 We recognise that commercial arrangements and the distribution of liabilities in the current market are complex and subject to significant change over time. However, we are not persuaded that there is a case for establishing a scheme to compensate for these costs rather than allow them to lie where they fall, or that a scheme could be devised which is likely to result in a fairer and more economically efficient outcome overall.

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<sup>24</sup> More detail can be found in the accompanying impact assessment - see footnote 2.



# Section 3: Proposals for the Domestic Sector: Functionality

## Introduction

3.1 This section sets out the Government’s proposals for the high-level functional requirements for the domestic smart metering system, as a basis for the detailed work which will need to be done subsequently to set common minimum technical specifications. Establishing this framework at the outset is important in order to ensure the metering system is capable of delivering the full range of benefits identified in our impact assessment, and as a starting point for achieving meter interoperability.

3.2 In broad terms, the meter functionality proposed will offer important benefits for consumers, and for the efficient management of our energy networks in the long term. Equally, smart meters must be sufficiently standardised to be interoperable, so that any energy supply company can work with any smart meter, and the requirements of the network operators are efficiently met. We will need to ensure any final approach is consistent with EU single market rules, and adheres to open data and communications protocols. It will be important to strike a balance between the restrictions of operating within defined standards and the freedom to innovate.

## Summary of proposals

3.3 The table below sets out our proposals for the high level functionality of the electricity and gas smart metering systems and the underpinning capabilities these are expected to provide.

	<b>Functionality</b>	Electricity	Gas
<b>A</b>	Remote provision of accurate reads/information for defined time periods - delivery of information to customers, suppliers and other designated market organisation	✓	✓
<b>B</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.	✓	✓
<b>C</b>	Home area network based on open standards and protocols - provide “real time” information to an in-home display, other devices to link to the meter system	✓	✓
<b>D</b>	Support for a range of time of use tariffs - multiple registers within the meter for billing purposes	✓	✓
<b>E</b>	Load management capability to deliver demand side management - ability to remotely control electricity load for more sophisticated control of devices in the home	✓	
<b>F</b>	Remote disablement and enablement of supply - that will support remote switching between credit and pre-	✓	✓

	payment	
<b>G</b>	Exported electricity measurement - Measure net export	✓
<b>H</b>	Capacity to communicate with a measurement device within a microgenerator - receive, store, communicate total generation for billing	✓

3.4 There is no assumption in these proposals as to how the functionality should be delivered; whether within a meter unit, in a series of modules connected to a meter or through some other technical solution.

3.5 We have undertaken preliminary analysis to assess whether the functional requirements proposed above are both cost-effective and support the full range of anticipated benefits from smart metering. Further detail of the analysis underpinning these proposals is set out in the smart meter Consultation Impact Assessment published alongside this consultation. In developing these proposals, we prepared a paper in December 2008 setting out initial ideas for informal discussion with a range of stakeholders. We are grateful to those stakeholders who were involved in those discussions, and we now invite comments on our formal proposals.

3.6 Our informal discussions with stakeholders to date indicate a broad level of support for most of the proposals. One exception is on the question of whether the remote disablement of gas supply should be a requirement for all gas meters. On this issue there is clear division of views, and we invite further analysis and evidence. Subject to this consultation, however, we believe there is a sufficient case for inclusion of this functionality as part of the minimum requirements.

3.7 The Government is also keen to ensure that the high level functionality fully reflects the importance of smart metering in the development of future smart networks, and we will facilitate further industry discussion of this issue during the consultation period.

3.8 The proposed functionality will give suppliers the opportunity to transfer consumers between credit and pre-pay and, under certain well-defined circumstances, to disconnect consumers remotely. Rules are already in place to protect consumers against inappropriate disconnection, whilst additional arrangements are in place to ensure that, as far as practicable, no vulnerable customer is disconnected. These rules and processes will need to be reviewed, and amended as necessary, to ensure they remain appropriate to the smart meter environment. This work will be taken forward as part of the implementation programme.

## **Discussion of Proposals - Electricity**

3.9 The proposed functionality is intended to support a wide range of benefits for consumers, for networks and for suppliers.

3.10 For consumers the home-area network will provide real-time information to a display to empower them to regulate and reduce their energy use. Multiple tariff registers and remote switching capability will enable suppliers to offer, and consumers to choose from a greater range of tariffs and tariff packages and payment methods

and for their supplier to enable the changes remotely. The switching process should be quicker and smoother so that consumers can change supplier more easily. Remote read capability should ensure that bills are 100% accurate with no need to stay at home for meter readings. Overall this functionality should support energy and carbon saving as well as improving the levels of service and choice for consumers. This same functionality will also provide suppliers with a range of benefits which will enable them to reduce their costs to serve, particularly for pre-payment meter customers, and improve the service they provide to consumers.

3.11 The demands on the energy network are set to change dramatically in the coming years, for example through increased renewable generation and distributed microgeneration, and this will require new approaches to network management. The proposed functionality also aims to support these developments. The information provided from electricity meters using the two-way communications will provide accurate data to enable network businesses to make more informed decisions about management of and investment in network assets. In the longer-term, the two-way communications, load management capability and home area networks will enable more sophisticated approaches to demand management, particularly management of demand at peak times. The capability to communicate with microgeneration devices enable these devices to be linked into the metering system and for consumers to be rewarded for exported generation.

3.12 We recognise, however, that more analysis needs to be done around the long-term needs of the networks, particularly as related to smart grids. We therefore want to use the period of consultation to facilitate further industry discussion of the high level network requirements for smart meters, and their costs.

### **Question**

**Q7** Do you agree with the functionality proposed for electricity meters? Please explain your reasons and if possible give evidence for your comments.

**Q8** 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.

## **Discussion of Proposals - Gas**

3.13 The functionality proposed for gas meters – two way communication, home area network, accurate remote reads and an increased range of tariffs – will result in many of the same benefits for consumers and suppliers as set out for electricity meters in terms of choice, energy saving, quality of service and reduced costs to serve. Benefits for gas network businesses are likely to be more limited than for electricity network businesses. But the availability of accurate information will bring benefits for gas network businesses in terms of better information on which to base decisions on the management of network assets.

3.14 We have included in our proposals the ability to remotely disable and enable supply from all gas meters, which will require the inclusion of a valve for this purpose. We anticipate that stakeholders' views will be divided on the question of whether it is sensible to mandate inclusion of a valve. Some proponents of the mandatory inclusion of a valve argue that it will facilitate greater flexibility in payment options for customers, such as pay-as-you-go, without the need to exchange the meter. Such flexibility may be helpful to consumers in a variety of ways, including offering better debt-management options. It is also suggested that including a valve as part of the minimum specification will be beneficial in ensuring consumers have a similar range of services across gas and electricity.

3.15 However, such valves are relatively expensive (our impact assessment currently assumes an additional £13 per meter) and will only be used by a proportion of customers. Some stakeholders oppose the inclusion of a valve on the basis that for the remainder of customers the valve would represent a cost without benefits.

3.16 We assume that a substantial number of meters will be deployed with valves regardless of whether it is mandated or not, because suppliers will deploy a smart meter with a valve to replace the 2 million plus existing pre-pay meters. Beyond this, it is possible some suppliers would take a commercial judgment to include valves in all their meters regardless of the mandate. Some opponents of mandatory inclusion of a valve argue that the Government should leave the market to decide an appropriate level of deployment.

3.17 However, there are currently over 200,000<sup>25</sup> meter exchanges to replace a credit meter with a pre-pay meter each year. If exchanges continue at around this level in the future, then we anticipate that the additional costs of replacing smart meters without valves would increase costs overall.

3.18 We therefore take the view that there is an economic case to mandate the remote disablement functionality. We acknowledge, however, that the issues are complex. We note, in particular, some opponents of a valve have suggested that the economic case may be weakened because a requirement for a valve would necessitate the replacement of old meters which would otherwise be retrofitted to meet the new smart specifications. It has also been suggested that additional maintenance costs might arise from the inclusion of a valve in all meters. The Government will consider any further evidence submitted on these and any other relevant issues before reaching final decisions.

## Questions

**Q9** Do you agree with the functionality proposed for gas meters? Please explain your reasons and if possible give evidence for your comments.

**Q10** 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?

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<sup>25</sup> Ofgem, *Monitoring company performance – annual reporting, 2007*  
[http://www.ofgem.gov.uk/Sustainability/SocAction/Monitoring/SoObMonitor/Documents1/2007%20Annual%20ExternalReport\\_finale%20050808.pdf](http://www.ofgem.gov.uk/Sustainability/SocAction/Monitoring/SoObMonitor/Documents1/2007%20Annual%20ExternalReport_finale%20050808.pdf)

**Q11** Are there any additional maintenance, administrative or management costs associated with having all gas smart meters with a valve?

## Displays and Provision of Information

3.19 Consumer engagement and action to save energy is central to the benefits case for smart metering. Access to the consumption data in real time provided by smart meters will provide consumers with the information they need to take informed action to save energy and carbon

3.20 The Government believes that free-standing displays which provide real-time, near instantaneous feedback on consumption (in terms of energy, money or CO<sub>2</sub>) will help to raise consumers' awareness of the energy they use and how savings can be made. In its April 2008 response to the August 2007 Metering and Billing Consultation the Government set out its expectation that a standalone real-time display would be provided with a smart meter to ensure the full environmental and energy-saving benefits of smart metering are delivered<sup>26</sup>. Some stakeholders argue that it is not necessary or desirable to provide a display in every case, and that the Government should allow greater flexibility to allow provision of real-time information to consumers via other means. We recognise that there are other methods by which information may be provided, and which individual consumers may find more accessible than free-standing displays. However, it is by no means clear what rules could be devised to regulate any dispensations from the requirement to provide a display. In our April 2008 document we noted that there should be flexibility for information to be provided through other formats (for example through the internet, TV) in addition to the provision of a display. However, we still consider that universal deployment of displays with the meter is likely to be necessary to ensure maximum consumer engagement overall.

3.21 Detailed requirements will be needed to set out the minimum level of consumption data that should be provided to consumers. To date we have received only limited input on this question. We want to use this consultation as a means to open up this debate. We would welcome input (from consumer groups in particular) on the type of data that will best incentivise behavioural change (for instance, information on energy use, money, CO<sub>2</sub> etc). Getting the balance right between providing enough data to enable behavioural change, without overloading consumers, will be important.

### Question

**Q12** Do you agree with the Government's position that a standalone display should be provided with a smart meter?

**Q13** 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, CO<sub>2</sub> etc)?

<sup>26</sup> Energy Billing and Metering: Changing Customer Behaviour – Government Response to a Consultation, [www.berr.gov.uk/files/file45996.pdf](http://www.berr.gov.uk/files/file45996.pdf)

**Q14** Do you have comments regarding the accessibility of meters/display units for particular consumers (e.g. vulnerable consumers such as the disabled, partially sighted/blind)?

# Section 4: Proposals for the Non-Domestic Sector

## Introduction

4.1 Business and public services use more than half of the energy consumed in Great Britain. Advanced and smart metering have an important role to play in helping them cut their energy use and carbon emissions, as well as in improving the quality, accuracy and range of the service offered by suppliers. Longer term, they will play an important part in building smarter energy networks.

4.2 The Government recently put in place new rules for metering at larger non-domestic gas and electricity sites. New licence modifications taking effect from 6 April 2009 will require the installation of advanced metering at such sites by April 2014. In industry terms, these measures apply to sites in electricity profile classes 5-8 (around 160,000 meters) and sites with gas consumption of between 732 MWh and 58,600 MWh per annum (around 40,000 meters).

4.3 Advanced metering is also already being quite widely installed in the small and medium business and public sector. This trend will be accelerated by the Carbon Reduction Commitment, which will have effect from April 2010 and will incentivise the early installation of advance metering, and initiatives such as the Office of Government Commerce's promotion of advance metering within the public sector.

4.4 In July 2008 the Government published a consultation on advanced and smart metering in the small and medium non-domestic sector<sup>27</sup>. The present document, represents the Government's response to the July 2008 consultation.

4.5 In this consultation document the Government now makes proposals for introducing new mandatory metering requirements for medium and smaller non-domestic sites (around 2.2 million electricity meters and 1.5 million gas meters). These meters can be at the sites of micro-businesses, small and medium-sized enterprises (SMEs), the smaller operations of large, multi-site companies or public sector facilities. In industry terms they consist of sites within electricity profile classes 3 and 4, and all non-domestic gas sites with annual consumption of less than 732 MWh.

4.6 Whilst the July 2008 consultation discussed businesses that fall within electricity profile classes 1 and 2, these will be home-based, and are treated as domestic customers for licensing purposes. We are, therefore, treating them as provided for within the domestic smart meter arrangements.

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<sup>27</sup> Consultation on smart and advanced metering for small and medium sized businesses and sites, and other non-domestic customers, July 2008 ([www.berr.gov.uk/files/file47191.pdf](http://www.berr.gov.uk/files/file47191.pdf))

## Summary of Proposals

4.7 This consultation document sets out proposals for introducing new metering requirements for small and medium non-domestic sites. The Government set out a range of possible approaches to metering in this sector in our July 2008 consultation, without favouring a particular option. We have reviewed the options and our cost benefit analysis in light of responses to the consultation. We now propose a preferred approach, which is a development of an option discussed in the earlier consultation.

4.8 The proposed approach is to extend to the small and medium non-domestic sector the minimum functionality that we will require for smart meters in the domestic sector, with certain exceptions to allow for individual consumer requirements. Where such exceptions apply, we propose the new minimum requirements should match those for advanced<sup>28</sup> meters in the larger business sector.

4.9 We currently envisage that the same timescale will apply for conforming to the new requirements in this sector, as will apply for the roll-out of domestic smart meters. Our indicative timetable for the latter is for completion by the end of 2020.

## Discussion of the Government's Proposals

4.10 The consultation published in July 2008 sought views on a range of possible approaches ranging between:

- providing smart or advanced metering or a combination of the two over ten years;
- providing smart or advanced metering or a combination of the two on a new and replacement basis;
- no Government intervention.

4.11 The draft impact assessment published with the July 2008 consultation showed a net benefit over the base case under five of the six change scenarios<sup>29</sup>. That analysis indicated that providing smart meters over ten years would offer the greatest benefit, assuming sufficient economies of scale resulting from mass purchase and installation of meters under a domestic roll-out programme.

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<sup>28</sup> **Advanced** meters here means meters that can be remotely read and, as a minimum, provide customers with access to half-hourly electric and hourly gas consumption data, available no more than twenty-four hours after use. These are the new minimum requirements for meters being installed in larger business sites under the licence requirements introduced from April 2009.

**Smart** meters here means meters that meet the requirements for domestic household metering as explained in Section 3 of this document. Section 3 sets out high-level proposals for the functional requirements of smart meters, although the detailed requirements will need to be developed when the Government has taken final decisions on these proposals. However, the minimum functionality of domestic-style smart meters will clearly be greater than the minimum functionality required of advanced meters.

<sup>29</sup> The change scenarios were: advanced meters rolled out over 10 or 20 years; smart meters rolled out over 10 or 20 years; and a choice of advanced or smart meters rolled out over 10 or 20 years. All but advanced metering over 20 years carried a net benefit.

4.12 Whilst the July 2008 consultation discussed a range of broad scenarios for indicative purposes, in practical terms a roll-out of domestic-style smart meters to all sites in the sector is not practicable. In particular, around 400,000 gas sites cannot have their gas supplied through such meters for technical reasons. Moreover, on many smaller sites, businesses with multi-site operations are likely to want a meter that is compatible with metering used on their larger sites.

4.13 The Government is clear that for practical reasons a new mandate in the non-domestic sector must allow for a mix of metering solutions on the ground. This need for a mixed solution was broadly accepted by industry respondents to our July 2008 consultation. At the same time, the Government is keen to ensure that businesses which may benefit from the additional functionality offered by smart meters over advanced meters in the future are able to do so. We also consider that maximising the provision of smart meters with the same minimum functionality requirements as for the domestic sector will in turn maximise the range of benefits delivered over and above the basic energy-saving and accurate billing outcomes from advanced metering. In particular, smart meters will provide a platform for the development of smart grids and increase the potential for automated load management in the longer term.

4.14 The Government therefore proposes to introduce a new general requirement that metering in this sector should have the same minimum functionality as will be required for smart meters in the domestic sector. However this general requirement would be subject to exceptions allowing flexibility for customers for whom domestic-style smart meters are inappropriate to their operational or business requirements. In such cases the minimum requirement would be those recently applied to the larger business sector<sup>30</sup>. The Government would welcome views on how such a requirement and exceptions could best be framed.

4.15 The Government is keen to receive comments on the practical implications of the proposal, particularly from the perspective of energy consumers, energy suppliers and others with a commercial role in metering in this sector. We would also particularly welcome views on whether this approach would effectively support the future development of smart grids and whether, for example, it would lead to a sufficiently extensive deployment of meters with the functionality in this sector necessary to support smart grids in the long-term.

4.16 We have reviewed and refined our impact assessment in light of responses to the July 2008 consultation and to reflect our specific proposals. This analysis indicates our proposals will result in a positive net benefit, of around £1.75 billion on central scenarios.

4.17 Under the proposed approach, we anticipate that domestic style smart meters would become the standard, and lowest cost, offering for the great majority of sites in this sector. Our impact assessment assumes that these sites would receive exactly the same meter as domestic customers. At present various types of commercially available meter can meet the minimum requirements of an advanced meter: the large,

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<sup>30</sup> As a minimum these meters should be capable of remote readings and provide customers with access to half-hourly electric and hourly gas consumption data, available no more than twenty-four hours after use. These are the new minimum requirements for meters being installed in larger business sites under the licence requirements introduced from April 2009.

purpose-built half-hourly or daily-read meters used at the higher end of the non-domestic market; smaller, purpose-built advanced meter reading (AMR) meters capable of remote access by suppliers; and existing meters that can be retrofitted with pulse-reading technology to collect data that can be remotely accessed. All of these solutions are currently used in the non-domestic market. The introduction of the proposed new requirements might lead to the development of lower cost advanced metering solutions. The large scale deployment of smart metering in the domestic market may also promote the market to provide additional functionality and cost efficiencies in advanced metering products. However, responses to our July 2008 consultation did not provide information to allow us to amend the assumed costs of advanced metering for our revised Impact Assessment.

4.18 Whilst our general expectation is that domestic style smart meters will become the lowest cost option in the non-domestic sector, there is a particular uncertainty about the cost-effectiveness in this sector of smart meters equipped with a valve for remote disconnection. The accompanying Consultation Impact Assessment<sup>31</sup> assesses the costs and benefits of mandating a valve for those customers receiving smart meters. It concludes that adding or removing this functionality makes only marginal differences to costs and benefits.

## Questions

**Q15** Do you agree with the Government's proposal to extend to the small and medium non-domestic sector the minimum functionality that we will require for smart meters in the domestic sector, with certain exceptions to allow for individual consumer requirements?

**Q16** Do you have any comments on how such a requirement, and the exceptions to it, should be framed?

**Q17** 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?

**Q18** Do you have any comments on the implications of the Government's proposed approach in this sector for the future development of smart grids?

**Q19** Do you have any comments on the revised Consultation Impact Assessment for this sector?

## Delivery Model

4.19 In July 2008, we assumed for the purposes of consultation that new metering in this sector would be provided under the existing competitive metering market rules. This recognised that, particularly amongst larger users and multi-site businesses, extensive use had been made of the right to change metering providers and, in some cases, for meters to be owned by customers themselves. In light of the delivery models being considered for the domestic sector roll-out, the Government would

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<sup>31</sup> This refers to the Impact Assessment of smart / advanced metering for SMEs and public sector sites, published May 2009, see footnote 3 for further details.

welcome views on the implications that adopting these models might have for the delivery of metering in the non-domestic market.

### **Question**

**Q20** Do you have any comments on the implications for the non-domestic sector of the options identified for a domestic delivery model?

## **Interoperability**

4.20 Interoperability arrangements based on an agreed set of functional requirements are an integral part of the Government's proposals for the domestic market (see Section 3). Any domestic smart metering approach utilised in the non-domestic sector would be likely to meet the same requirements.

4.21 In setting rules for advanced metering for larger non-domestic sites, the Government did not impose an interoperability requirement. It is, however, supporting the voluntary work on interoperability being taken forward by interested parties and facilitated by Ofgem. As advanced metering becomes available to a greater number of customers, it is likely that interoperability arrangements will become essential for suppliers and customers alike, and this view was overwhelmingly supported by respondents to the consultation. If interoperability arrangements for larger sites can be successfully concluded, the Government would then expect them to be widened to encompass medium and smaller sites.

### **Question**

**Q21** 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?

## **Engagement with Business**

4.22 The Government liaised closely with business and business representatives during the consultation, and is committed to minimising costs and inconvenience and maximising choice and benefits for business customers. There is a growing market in the provision of energy service support to non-domestic customers, both by suppliers and by dedicated energy service companies. The Government expects the wider availability of advanced and, in due course, smart, metering, to lead to an expansion of such services, which will help businesses realise the benefits that can be unlocked by innovative metering. The Government also recognises – as responses to the July 2008 consultation made clear - that businesses will benefit from broader advice about how advanced metering works and what support is available. The Government will work with business and other interested parties to establish what information and support business customers need and how to provide it.



## Section 5: Other Issues and Next Steps

5.1 As noted earlier in this document, a substantial central programme of work is required to prepare for roll out. Under all delivery models, this programme will include detailed design of the delivery model, development of technical specifications for meters, interoperability and communications, industry code changes, license modifications and detailed consideration of consumer protection and data handling issues. Depending on the delivery model, the central programme may also involve running competitive tenders to appoint provider(s) of central communications services, and/or competing franchises for metering services. Under all delivery models, extensive industry changes will be required. DECC, Ofgem, industry, consumer groups, trades unions and other stakeholders will all need to participate in the preparation programme and play their part in making it a success.

5.2 This consultation document makes proposals on key aspects of the policy framework for the preparation programme. The Government will carefully consider the responses to this consultation and announce its conclusions accordingly. These conclusions will provide the basis for further development of the preparation programme. They will also provide a basis for setting out more detailed plans for the preparation programme and governance and management arrangements.

5.3 Given the scale of the preparation work necessary, the Government recognises the importance of progressing those workstreams which can sensibly be taken forward during the consultation period and will look to do so where possible, together with Ofgem and interested parties. We plan, for example, to develop work in the following areas:

- definition of the programme structure and allied governance processes to support the completion of the pre-rollout preparation activity;
- scoping, planning, and resourcing the required programme of work;
- further exploration of possible approaches to providing a co-ordinated communications infrastructure;
- high-level review of existing industry codes and an assessment of the impact of the roll-out of smart meters on these codes.

5.4 Clearly a wide range of policy, technical and operational issues will arise and need to be addressed during the preparation programme. Some of these we can anticipate now, many we will discover as we go along. This consultation document has not attempted to capture the full range of these issues. However, we would welcome views from consultees on whether there are further important issues relating to the policy framework for smart meter implementation which we should be addressing at this stage.

### Question

**Q22** Has Government identified the right issues for the immediate next

steps? Are the other activities or key issues which you think should be addressed at this stage of the preparations for roll out?

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