



Department
of Energy &
Climate Change

Smart Metering Implementation Programme

Second Annual Report on the Roll-out of Smart Meters

December 2013

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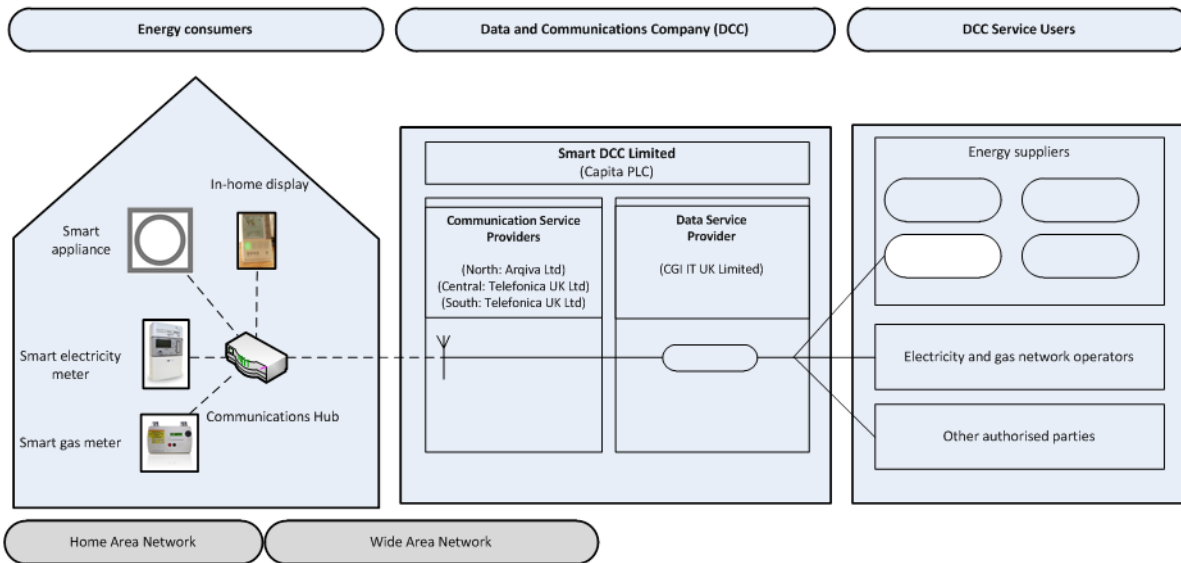
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The Smart Metering System

Figure 1: this diagram illustrates the main parts of the smart metering system, including the equipment and communications within premises, the organisations that will use the information provided by smart meters (DCC Service Users), and the system provided by the Data and Communication Company (DCC) that will link these organisations with smart meters.



The smart metering system

This section explains how the smart metering system will work from late-2015, when a new, shared smart metering national infrastructure will be in place. Some suppliers are already offering smart meters using their own systems and technologies.

Equipment and communications within energy consumers' properties

The equipment installed by suppliers will normally consist of a smart electricity meter, a smart gas meter (where required) and a communications hub (which may be integrated in the meter). Energy suppliers will offer domestic customers a free in-home display as part of the installation process.

Smart electricity and gas meters

Existing electricity and gas meters will be replaced with smart versions which automatically pass accurate meter readings to energy suppliers, and support new functions including smart appliances and time-of-use tariffs.

In-home display

The in-home display allows consumers to see what energy they are using and how much it is costing in near-real-time. The display can also show information about the amount of energy used in the past day, week, month and year.

Communications hub

The communications hub has two functions: it allows the smart meters and in-home display to communicate with each other over a Home Area Network, in a similar way to wireless computer networks (Wi-Fi); and it provides a link to the Wide Area Network, which allows information to be sent to and from meters by suppliers, network operators and energy service companies.

Organisations that will use the information provided by smart meters (DCC Service Users)

A number of organisations will communicate with smart meters.

Energy Suppliers A consumer's energy supplier will communicate remotely with smart metering equipment to take meter readings, update price information on the in-home display and take readings on change of supplier or change of tenancy.

Energy Networks Energy network companies will be able to access data to help them understand the loads on their network at the local level and to respond faster to loss of supply. Networks will have better information upon which to manage and plan current activities and move towards smart grids, which support sustainable energy supply.

Organisations offering services Consumers can allow other organisations to have access to the data from their smart meter. For example, switching sites could use accurate information about the amount of energy used to advise consumers on suppliers and tariffs. As the roll-out proceeds, more devices should become available to help consumers manage their energy usage, including smart appliances that can operate automatically when electricity is cheaper.

Smart meter communications outside the home: the Data Communications Company and the Wide Area Network

The Data and Communications Company will put in place communications across Great Britain to send and receive information from smart meters to energy suppliers, energy network operators and energy service companies using the Wide Area Network.

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Ministerial Foreword



This is the Government's Second Annual Report on the smart metering programme. The programme, which will lead the installation of 53 million meters in households and at smaller non-domestic premises by 2020, is our largest energy infrastructure project in decades.

Since the First Annual Report was published in December 2012, we have seen significant advances. In particular, we have completed the process of establishing the Data and Communications Company (DCC), which is responsible for linking meters in homes and non-domestic sites with the systems of energy suppliers and networks and energy service companies. We have also brought into effect the Smart Energy Code, the legal framework that governs the relationship between the DCC and its users. And we have defined our expanded smart meter technical specification that suppliers and manufacturers will use to build the meters we will all receive.

This year saw two major consumer-facing developments: the establishment of the Central Delivery Body, which will develop and deliver the key, centralised messages about smart metering for homes and micro-businesses; and the entry into force of the Installation Code of Practice, which will help ensure a good customer experience and the delivery of programme benefits.

This range of activities - and the range of parties involved - makes it clear that the success of the programme hinges on those outside Government. It is suppliers, installation companies, service providers and those working on behalf of consumers who will actually deliver the roll-out. And are already delivering real meters to real consumers and bringing real benefits.

For its part, the Government will continue to play a key part in monitoring and evaluating the roll-out, to ensure that benefits are delivered, and in supporting industry in delivering the roll-out. And by working closely with industry, consumer groups and other interested parties, we will ensure that we deliver an ambitious programme that will bring huge benefits to consumers and to Great Britain as a whole. I very much look forward to building on what has already been achieved by continuing to working with the many parties involved.

A handwritten signature in black ink, appearing to read 'Sandy He'.

Baroness Verma of Leicester
Parliamentary Under Secretary of State
Department of Energy and Climate Change

Chapter 1- Introduction

1.1 This is the Government's second annual progress report on the roll-out of smart meters in Great Britain. It provides an introduction to smart metering and its benefits to consumers. It also gives a high-level overview of the steps that the Government and the energy industry are taking to prepare for the roll-out of smart meters, which is expected to start in earnest in Autumn 2015. The report reflects the significant developments in the smart metering programme since December 2012.

The Smart Metering Implementation Programme

1.2 The Government's vision is for every home to have smart electricity and gas meters, and for smaller business and public sector premises to have smart or advanced metering suited to their needs. The roll-out of smart meters will play an important part in Britain's transition to a low-carbon economy and help us meet some of the long-term challenges we face in ensuring an affordable, secure and sustainable energy supply.

1.3 Smart metering carries multiple benefits that fall to a range of parties: to customers, to suppliers, to networks and to Great Britain as a whole.

- **Consumers** will have near-real time information on their energy consumption to help them control energy use, and avoid wasting energy and money. Smart meters will bring an end to estimated billing, helping consumers to budget better and help make switching between suppliers smoother and faster. New products and services will be supported in a vibrant, competitive, more efficient market in energy and energy management
- **Suppliers** will have access to accurate data for billing and to improve their customer service. They will also be able to reduce costs, for example by reducing call centre traffic, removing the need for a site visit to read meters and better manage debt.
- **Energy networks** will have better information upon which to manage and plan current activities and the move towards smart grids which support sustainable energy supply.

1.4 Smart metering is a major national programme, and one of the largest and most complex investment programmes undertaken by the energy industry. The programme aims to roll out 53 million smart electricity and gas meters to all domestic properties and smart or advanced meters to smaller non-domestic sites in Great Britain by the end of 2020 - approximately 30 million premises in all.

1.5 The smart metering programme is being delivered in two phases. During the Foundation Stage, which began in March 2011, the Government is working with the energy industry, consumer groups and other interested parties to ensure that all of the necessary groundwork is completed before energy suppliers start the process of providing smart meters to most of their customers. Most customers are expected to receive their smart meters between Autumn 2015 and 2020, although some will receive smart meters during the Foundation Stage, as energy suppliers start up their programmes.

Key progress since first report

1.6 Since December 2012, we have passed a number of significant milestones on the road towards smart meters' being rolled out to most consumers. Some of the most important developments have been:

- the appointment, in September 2013, of the Data and Communications Company (DCC) licensee and of the data and communications service providers (Chapter 3).
- the designation of the Smart Energy Code (SEC) and the establishment of the SEC Panel, supported by a contract for the related administrative and secretariat (SECAS) contract (Chapter 2).
- confirmation of the regulatory approach to the Foundation Smart Market (Chapter 2).
- the establishment, in June 2013, of the Central Delivery Body (CDB) (Chapter 5).
- the coming into effect, in June 2013, of the Installation Code of Practice (Chapter 6) and regulations on data access (Chapter 6).
- the publication, in September 2013, of the first quarterly report on the progress of suppliers' smart meter installations (Chapter 4).
- the publication of a range of research on consumer attitudes to and engagement with smart metering, with a further programme of in depth research underway (Chapter 5).
- the development of arrangements for monitoring both costs and delivery of benefits (Chapter 5).

Chapter 2 – The Government’s Role - Plans and Progress

2.1 The Government is accountable for ensuring that the benefits of the smart metering roll-out are realised – and in particular that consumers see the benefits of smart metering. The Government has therefore played a central role during the Foundation Stage, which began in 2011, by establishing the policy, regulatory and commercial framework that will underpin and drive the roll-out of smart metering. This enabling framework has been designed to ensure that smart meters will be successfully rolled out in a way that maximises the benefits. For their part, energy suppliers are responsible for planning and delivering the roll-out on the ground, working within the framework we have established. This separation of overall accountability and delivery means that the Government has a critical role to play in monitoring and evaluating the roll-out of smart meters, both during the Foundation Stage and during the period from Autumn 2015 to 2020, to ensure that the enabling framework remains fit for purpose in driving benefits realisation.

Key developments during 2012

2.2 Since December 2012, the Government has completed a number of key activities:

- The Government has continued to lead the development, with industry and other interested parties, of SMETS 2 - the second version of the common technical standards for smart metering equipment. During 2013, it successfully notified the first iteration of SMETS 2 to the EU under EU standards rules. This addition to the technical standards includes the wireless communications standards to be used by all smart meters and associated equipment, to ensure that they can interoperate with each other.
- The Government completed the competitions to establish the new central organisation and services that will deliver communications between smart meters and energy suppliers, network operators and other authorised service users. The Government awarded a licence to this new organisation - the Data and Communications Company (DCC) – in September 2013. The Government also conducted competitive procurement processes for the data and communication service providers so that the DCC could sign contracts at the time that its licence was awarded (see Chapter 3).

- The Government has developed a new industry code - the Smart Energy Code (SEC). The SEC, which was designated in September 2013, is a new, multiparty agreement that sets out the contractual relationship between the DCC and its users, including the detailed day-to-day rules, rights and obligations for the different industry parties that use smart metering equipment and the information it provides. The Code was developed in consultation with industry and other interested parties and was created through, and come into force under, the DCC licence. The DCC, energy suppliers and network operators are now required, by licence conditions, to become parties to the SEC and comply with its provisions. Other bodies that wish to use the DCC services, such as energy efficiency and energy service companies, must comply with the SEC. The SEC is self-governed, enabling any party to raise change proposals, debate issues, and resolve disputes without the need for day-to-day regulatory intervention. It is managed by a Panel of experts drawn from SEC parties, with oversight where appropriate from Ofgem.
- The Government has consulted on a number of measures that support the installation of smart meters during the Foundation Stage and will now put in place the associated regulatory arrangements. These include Licence Conditions on Suppliers that apply when a consumer with a smart meter changes supplier, together with clarity in the SEC on how meters installed during the Foundation period will be enrolled into the DCC once the DCC is in place. These measures will give more confidence to those who are considering investing in meters during Foundation and to reduce the risk that consumers will lose smart services when they change supplier.

Changes to the roll-out timetable

2.3 In December 2012, the Government gave a commitment to review the programme plan and timetable during the first half of 2013, taking into account information both from early smart meter deployment by energy suppliers and from bidders for the contracts to provide the common data and communications infrastructure necessary to support smart metering nationally. In particular, the Government tested the time needed for the design, build and test phases of industry's programmes. The consistent message was that more time was needed if the roll-out of smart meters were to get off to the best possible start and if customers were to be sure of a quality service. The Government therefore now expects that, from Autumn 2015, all major energy suppliers will be able to use the shared infrastructure provided by the Data and Communications Company, for both credit and prepay customers, to support the completion of their smart meter roll-outs by 2020.

From 2014 to 2015

2.4 Following establishment of the DCC in September 2013, the mobilisation phase for the DCC, transitional governance and the joint industry plan are complete. We are now seeing the gradual transfer of responsibility for the implementation and sustaining of the smart metering system to industry and the DCC, with regulatory oversight by Ofgem and continuing ownership of the overall programme by DECC. DECC will now take forward work to co-ordinate activities in the industry plan, gain assurance over progress and ensure readiness for Autumn 2015. The period between now and Autumn 2015 will thus see the delivery of the smart metering infrastructure begin in earnest. A key focus over the next two years will be the design, build and testing of DCC, DCC service providers' and DCC users' systems. In parallel, preparations for delivering the roll-out on the ground will be stepped up, starting to build up consumer awareness of smart metering and to prepare for the logistical challenges of delivery.

2.5 In September 2013, DECC implemented joint governance arrangements to reflect new roles and responsibilities and help ensure a successful shift from design to delivery. These arrangements involve a wide range of participants at various levels within their respective organisations and are primarily focussed on driving cross programme delivery required for the realisation of projected benefits from Autumn 2015.

2.6 Given the level of change that will occur during this period, and the number of different parties involved, it is essential that DECC's approach to transferring responsibility be well defined, planned, resourced and governed. Clear objectives, planning and delivery by both new and established industry parties will be essential in ensuring that the programme remains on track and is implemented in a way that meets the needs of stakeholders and delivers the desired benefits. DECC has therefore worked with a wide range of interested parties to define key milestones and the roles and responsibilities of DECC and other key delivery parties.

2.7 With the mobilisation phase of the DCC now completed, transitional governance arrangements established and a joint industry programme plan in place DECC will now take forward work to monitor and co-ordinate key programme participants readiness to support the roll-out of smart meters to most consumers from Autumn 2015.

2.8 During 2014, the Government's key priorities will be:

- Further development of the SEC to ensure that the relevant arrangements are in place to support the testing of the data and communication systems, including security, data access and enrolment of foundation meters.
- Completion of SMETS 2 to enable suppliers to specify and procure the next generation of smart metering equipment. The Government is currently developing the second iteration of SMETS 2, including the Communications Hub Technical Specifications (CHTS), the Great Britain Companion Specification (GBCS) and the Commercial Products Assurance Security Characteristics for GB Smart Metering, in consultation with industry. The Government expects to complete this process in mid-2014.
- Monitoring activity by all parties responsible for delivering the roll-out to understand their capability and readiness to meet their obligations and to track progress throughout the roll-out period.
- Finalising plans for monitoring the realisation of benefits, understanding risks and opportunities and considering whether intervention may be needed to give greater assurance on delivering benefits.
- Working with the Central Delivery Body (CDB) to build customer awareness and understanding at an early stage to assist in an efficient roll-out that delivers the range of benefits.

From 2015 to 2020

2.9 The Government expects that, by Autumn 2015, all major suppliers will be capable of installing smart meters, supported by DCC services, and in particular that:

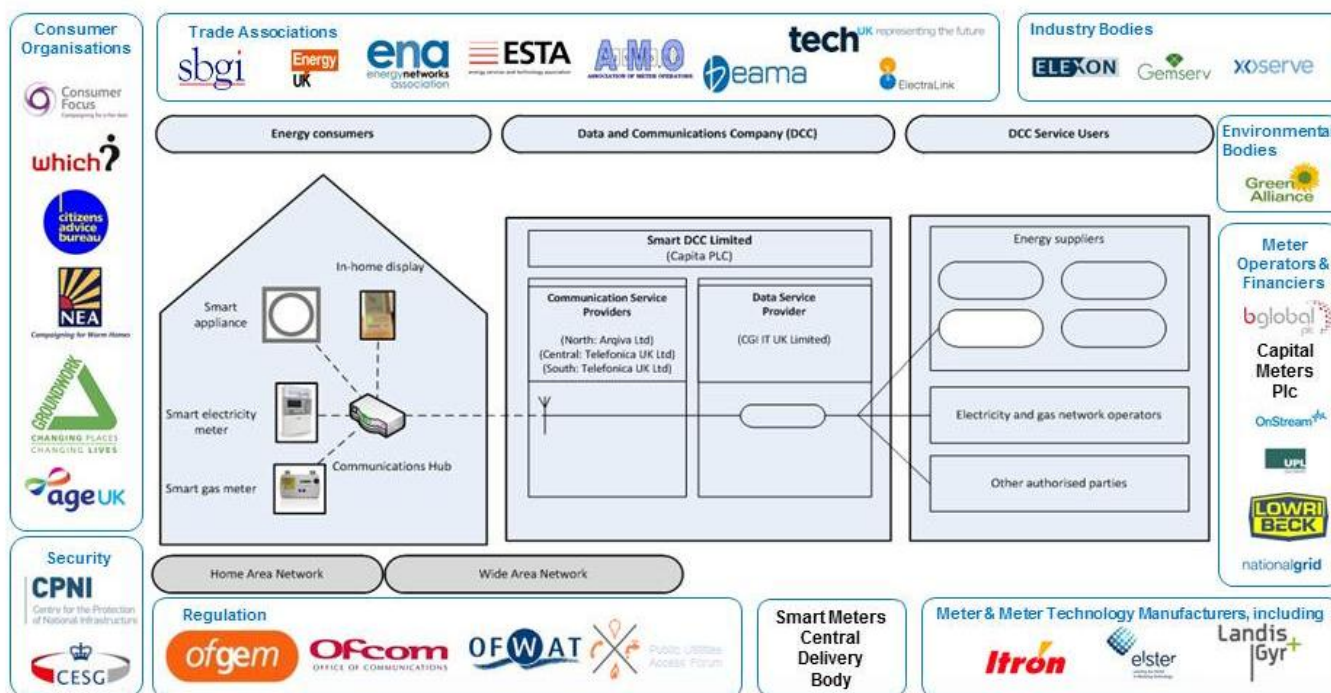
- The DCC will have built and tested its data and communication systems for SMETS 2 equipment and be operationally ready (service desk, call centres, logistics etc.) to serve its users –principally energy suppliers and network companies.
- All large energy suppliers will be capable of using DCC services and ready to use them, be able to start installing SMETS 2 smart meters and offer basic services to both credit and prepayment customers.
- Gas and electricity distribution networks will be capable of supporting, and ready to support the installation of smart meters. Electricity distribution networks will also be ready to use the DCC service to improve network management by receiving and responding to alarms and alerts, for instance, for power cuts.

2.10 These expectations complement the regulatory and commercial levers that are already in place and are designed to further support delivery of benefits. They also provide a means of identifying the need for any new regulatory obligations, or the further definition of existing obligations, either at this point in the programme or later. Setting clear expectations also enables Government and industry to establish checkpoints for monitoring progress and focusing on any problem areas between now and Autumn 2015. This should help the industry to be in a strong position to complete the roll-out of smart meters by 2020, in line with their regulatory obligations.

Chapter 3 – The Industry role

3.1 An extensive range of industry parties is involved in the roll-out of smart metering. This chapter focuses on the role of energy suppliers, energy networks, meter manufacturers and the new Data and Communications Company. Figure 2 shows the range of interests.

Figure 2



Role of suppliers

3.2 Energy suppliers are responsible for planning and delivering the installation of smart meters for their customers. Suppliers need to adapt their businesses to prepare for the smart meter roll-out, including upgrading their internal systems to handle smart meter data, procuring equipment (especially smart meters and IHDs), recruiting and training staff (such as meter-installers) and developing the customer installation journey.

Training and recruitment

- 3.3 Suppliers are planning ahead to establish how many back office staff and meter installers will be required to achieve their planned number of installations throughout the roll-out period. Suppliers have created, and in some cases begun using, training programmes for their back office staff, such as call centre workers, to be able to deal with specific smart meter-related queries and provide energy efficiency advice.
- 3.4 Suppliers will also need to ensure that sufficient, competent meter installers are available to efficiently and safely complete the roll-out by 2020. Suppliers have worked closely with DECC and the National Skills Academy for Power (NSAP) to create models which estimate the resources required and to establish training strategy.
- 3.5 Suppliers have been adopting a number of approaches to ensure they have enough meter installers. Some have been using this as an opportunity to re-train current installers and meter readers, as well as recruiting and training new staff; others have chosen to procure installers through contractors.
- 3.6 Under the Installation Code of practice all smart meter installers will need to meet a national training standard, leading to an NVQ Level 2 Diploma for successful trainees, before they become qualified to install smart meters. This standard, developed by suppliers in conjunction with NSAP is required for both new recruits and existing members of the industry and on completion individuals will achieve accredited status allowing them to fit meters. A database of all such qualified installers will also be maintained by industry.
- 3.7 Considerable progress has been made this year both in terms of recruitment and training. A number of suppliers have significantly increased their smart meter capability and training centres have been established in more than 10 locations across the country. The content of the training courses has continued to evolve as learning is gained during the Foundation stage and key programme milestones are met, notably the Procurement of the communications and data service providers.

Systems and Procurement

- 3.8 Suppliers are currently upgrading their internal IT systems to be able to handle smart meter data to help facilitate the roll-out of smart meters and to increase the range of services they will be able to provide to their customers. Suppliers are also working with external companies to procure services and hardware including smart metering equipment and smart metering installations. Suppliers commonly have contracts with a number of companies to provide them with the components of the smart metering system. Suppliers have indicated that they have already started, or will shortly be starting, discussions with payment agents to set up new contracts for the delivery of smart prepay, so that systems can be established and fully tested in time for the roll-out of smart meters.

Testing

- 3.9 In addition to their own planned testing and trialling, suppliers are required to be involved in testing the DCC solutions. They will also need to demonstrate through testing that they can interface with DCC systems securely and effectively as part of the criteria for becoming a DCC User. The DCC will be responsible for demonstrating, through testing, that its systems work in their own right and can interoperate with those of others. The DCC will also be required to provide the environment for DCC Users to: i) test that the metering equipment that

the suppliers intend to deploy interoperates with the DCC's systems; and ii) test the supplier's interface with the DCC by executing end-to-end tests of the supplier's own choice on a voluntary basis.

Trialling

- 3.10 Suppliers plan to trial their approaches to make sure that all of the elements of the smart metering system work well together and their installers and back office staff are able to provide customers with a good service. Suppliers have indicated that they intend to carry out much of their trialling activities in core areas where they have a high volume of customers or are targeting particular types of customers (for example, those who need their meter replaced anyway). Trialling activities already undertaken or in progress include: IT systems and operational readiness, testing the booking process with different customers, developing smart applications, carrying out small scale installations of smart meters and working with external bodies such as local authorities, consumer groups, community energy projects and local housing officers to engage with communities and offer assistance to vulnerable customers, in particular, at the installation visit.
- 3.11 Suppliers are already adapting their processes in light of early lessons learnt. For example, some suppliers are moving away from outbound calls, which may be unpopular with some customers to contacting customers via letter or emails and asking them to contact their supplier to make an appointment either by telephone or on-line. Customers are then better informed and more likely to engage with the installation process. Some suppliers are also starting to offer online registration forms, which customers can complete to express their interest in smart metering, so that they can be contacted once the supplier is in a position to install a meter in their home.
- 3.12 The feedback that suppliers receive from their customers with new smart meters installed is already helping to refine their approaches, for example, to the installation visits and ways to help customers engage with their IHDs longer term and continue to change their energy behaviours. In addition, suppliers have been testing whether they need to take different approaches to the non-domestic and domestic roll-out, including whether they should prioritise any particular groups of customers.
- 3.13 Suppliers have indicated that a different strategy may need to be adopted when approaching different types of domestic customers, for example vulnerable or prepayment meter customers. They envisage that trials will help to inform the materials that are developed, the approach installers take with different customers and the type and method of contact from call centres. Suppliers are also working closely with consumer and vulnerable customer groups to help understand these customers' requirements. Suppliers will also be training their call centre staff to identify vulnerable customers and ways to help them through the installation process e.g. involving a family member or friend.

Role of Manufacturers

- 3.14 Energy suppliers will buy their smart meters from one of the range of meter manufacturers, which are based in the UK and abroad. The expertise of manufacturers has enabled them to provide valuable advice on the development of the technical specifications - principally through their trade associations, the British Electrotechnical and Allied Manufacturers Association (BEAMA) for electricity and the Energy Utilities Alliance (EUA) for gas.

- 3.15 These specifications include the Great Britain Companion Specification (which describes the messages used in electronic communication between the smart metering equipment) and the supporting ZigBee and DLMS protocols (which are the “languages” the messages are formatted in). In addition they are working with the DCC on several areas, including on the communications hub interface design (the specification for the plug and socket by which the hub attaches to the meter).
- 3.16 A number of manufacturers have launched SMETS 1 equipment this year (which can be firmware upgraded to full SMETS1 capability without the need for a home visit), with a view to achieving full SMETS 1 capability during 2014. Manufacturers have said that SMETS 2 and CHTS equipment will be available later in 2014.

Role of Networks

- 3.17 The electricity distribution network operators are also making preparations for the rollout of smart metering. The activities that they will undertake are:
- Providing meter registration data to support the DCC.
 - Providing operational support for the installation process.
 - Preparing plans for the aggregation and anonymisation of consumption data.
 - Utilising smart meter data to improve their operations and provide benefits for customers.
 - Both in terms of cost saving and the quality of service they can offer.

The role of DCC and the appointment of the DCC licensee

- 3.18 The meter’s ability to communicate remotely is key to delivering the benefits of smart and advanced metering. Where energy suppliers are installing advanced or early smart metering, they are establishing their own arrangements for communicating with the meters, for example by using mobile phone signals. For mass roll-out, the Government took the decision to establish a new Data and Communications Company (DCC), a licensed body overseen by Ofgem, which will be responsible for two-way communications and the transfer of data between smart meters and energy suppliers, network companies and other authorised third parties.
- 3.19 The establishment of DCC, which supports the competitive markets in both energy supply and metering provision, brings various benefits, including ensuring that customers can continue to switch supplier; the ability for metering data to be shared with network companies, thus facilitating more efficient network management; and the ability of customers to give third parties access to their data, for example as part of an energy advice service or to allow tariff comparisons. In the future, there are plans to move the meter registration systems into DCC. This will allow further improvements to be made to industry processes, including streamlining the switching process.
- 3.20 Over a two-year period, DECC led the procurement, by competitive tender, of the new DCC licensee, as well as that of the Communications Service Provider (CSP) and Data Service Provider (DSP) services that will enable the DCC to provide the data and communication services to support smart metering.
- 3.21 In September 2013, Smart DCC Ltd, a wholly owned subsidiary of Capita PLC, was awarded the DCC Licence for twelve years, with a value of c£175 million. CGI IT UK Limited

will fulfil the DSP role, developing and operating the system controlling the movement of messages to and from smart meters. The estimated value of this contract over eight years is c£75 million. Arqiva will provide CSP services across the north of England and Scotland, providing wide area communications to and from smart meters. The value of this contract over fifteen years is c£625 million. Telefónica UK Limited will provide CSP services across the Midlands, East Anglia, Wales and south of England at a value of c£1.5 billion over fifteen years.

3.22 When the DCC Licence formally began in September 2013, activities associated with the mobilisation of the DCC were initiated. These activities included the knowledge transfer from the DECC programme to the DCC and its constituent parties. The knowledge transfer encompassed key design and requirement documents covering topics such as security, equipment testing and the evolving regulatory framework in which they will operate. The DCC is now developing its infrastructure and services, co-ordinating the activities of its Service Providers and engaging with future DCC Service Users in a major Foundation stage activity that will lead to the beginning of initial live operations in Autumn 2015.

Chapter 4: Progress in installing Smart Meters

4.1 Suppliers are using the Foundation Stage to undertake testing and trialling of installations to prepare for rolling out smart meters to most consumers, to help ensure their customers have a positive experience of smart metering. The scale of suppliers' activity varies. Some have adopted the technology early to enable their customers to take advantage of the benefits of smart metering. Others will not roll out significant volumes of meters during the Foundation Stage.

Reporting Progress

4.2 In the 2012 report the Government published the first figures on the progress the larger energy suppliers had made to date in preparing for, and starting to deliver, the roll-out of smart meters and their future roll-out plans up to the end of 2020. Suppliers have continued to provide quarterly and annual reports on progress. The Government has aggregated installation data in this Report to give an overall picture of suppliers' early progress (see Table 1 below). The Government also has some information from smaller suppliers, and will be obtaining more detailed information in 2014. The Government will begin formally to request information from small suppliers in 2014.

4.3 To enable interested parties to scrutinise and engage with the roll-out of smart metering, the Government will continue to publish information on progress¹. In addition to this Annual Report, we also publish quarterly statistical updates as well as research and other evaluation outputs.

Progress to date

4.4 During the period in which SMETS has been developed, suppliers making an early start have generally been rolling out smart-type and advanced meters to their domestic customers and smaller non-domestic sites, respectively (see Table 1). Smart-type and advanced meters offer some, but not all, of the functionality of SMETS meters. Although they will have to be replaced by December 2020, they allow suppliers to learn lessons ahead of their larger-scale installation of smart meters and give customers early access to some of the benefits of smart metering. By the end of September 2013, large suppliers were operating 804,400 smart-type meters.

4.5 Some of the large suppliers have begun to install smart meters during 2013 and by the end of September were operating 177,000 smart meters in domestic properties and 900 smart meters in smaller non-domestic sites. Energy suppliers report the number of smart meters they have installed and include both meters that are SMETS-compliant, and those they expect to upgrade to become SMETS-compliant. Suppliers have indicated that most, if not all,

¹ Data and information provided to Government by energy suppliers is anonymised and aggregated as necessary to ensure that commercially sensitive information is appropriately protected.

of the smart meters currently installed will need to receive updates, which are expected to be delivered remotely, before they are fully SMETS-compliant.

4.6 Further information on smart meter installations can be found on the GOV.UK website in the quarterly statistical releases at <https://www.gov.uk/government/collections/smart-meters-statistics>

Suppliers' approach to roll-out

4.7 Energy suppliers are free to plan the roll-out of smart meters in a way that suits their business and the needs of their customers, subject to the requirement to complete the roll-out by 2020.

4.8 Suppliers' proposed approaches to roll-out vary and take into account factors such as the location of their customer base and installation workforce and when their customers would need their traditional meters replaced on a routine basis. The approach currently adopted by suppliers may change as they progress into and through the period during which most consumers will receive smart meters, and learn lessons from trials and installations.

Approach to roll-out in the non-domestic sector

4.9 In the smaller non-domestic sector, advanced meters² may be installed as an alternative to smart meters before April 2016, or, if contracts are in place before April 2016, until December 2020. This difference of approach between the domestic and non-domestic sectors reflects the longstanding use of advanced metering at non-domestic sites and the interest of many non-domestic customers, especially multi-site organisations, in having common metering across a property portfolio. Significant numbers of advanced (or smart-type meters) have already been installed in the non-domestic sector, where meters are often installed by third party service providers as well as suppliers. At the end September 2013, the larger suppliers were operating 508,500 smart and advanced meters.

Table 1: Total numbers³ of smart, smart-type and advanced meters operated by the larger energy suppliers by 30 September 2013

Meters at Domestic Properties		Meters at Smaller Non-Domestic Sites	
Smart meters	176,800	Smart meters	900
Smart-type meters	804,400	Advanced meters	507,600

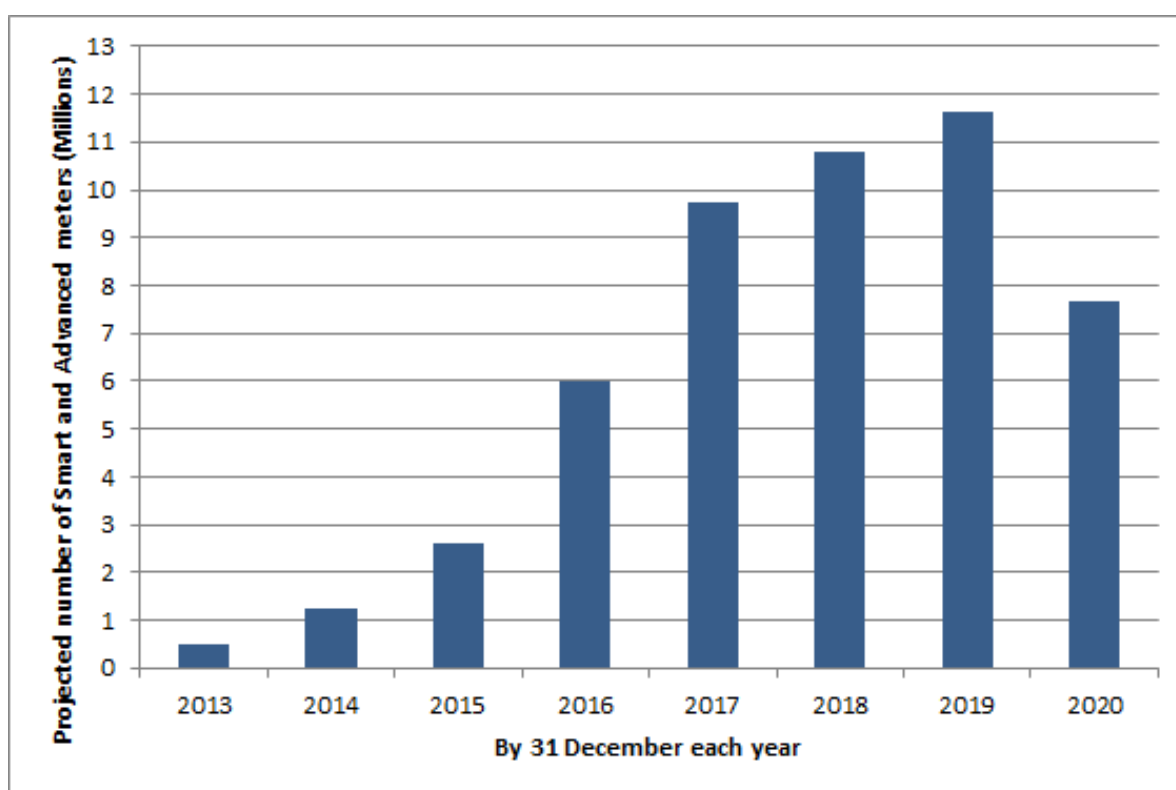
² Advanced metering is defined as being able to provide half-hourly electricity and hourly gas information that is remotely accessible by the supplier and to which the customer can have timely access.

³ Rounded to the nearest 100 meters.

Smart meter roll-out profiles to the end of 2020

4.10 The larger suppliers provide information to Government about their early plans for rolling out smart meters, looking ahead to 2020. The profiles for each supplier will be revised as lessons are learnt (e.g. from undertaking testing and trial installations) and strategies are refined, but aggregating the information provides a useful snap-shot, on a national basis, of suppliers' current thinking about their proposed approach, as at December 2013 (see Figure 3). Since each supplier is responsible for planning its own roll-out, and a range of different strategies is being developed, we expect that activity will go on across the country from now to 2020.

Figure 3: Current projections by the larger suppliers for the number of smart and advanced meters to be installed per annum in domestic and smaller non-domestic properties between 2013 and 2020 (at December 2013)⁴



⁴ Roll-out profiles provided by the larger suppliers assume their customer base remains unchanged throughout the roll-out.

Chapter 5 - Consumer Benefits and Consumer Engagement

5.1 From the outset, a key objective for the Government has been to deliver benefits to consumers, and this has informed our approach to policy, regulatory and technical design. As the roll-out develops, the Government is working to ensure that the overall benefits for consumers are maximised. This goal has determined our approach to developing the policy and regulatory framework, including placing a range of obligations on energy suppliers; developing the Consumer Engagement Strategy; and requiring large suppliers to set up a Central Delivery Body (CDB) with objectives focused on the delivery of consumer engagement and benefits, including for vulnerable and low income consumers. DECC is overseeing the delivery of all resulting benefits, and carrying out a programme of monitoring and evaluation. These activities will guide delivery and policy development and enable the Government to respond to both threats and opportunities as they emerge.

Approach to benefits and monitoring

5.2 Ensuring that consumers receive the full potential benefits of smart metering is fundamental to the success of the roll-out. DECC is therefore working closely with consumer groups, industry and other interested parties to understand the full range of potential benefits and to ensure that all the activities and measures needed to optimise them are in place. Economic analysis has consistently indicated that consumers will benefit financially from the roll-out, through a combination of direct energy savings and reduced industry costs and efficiency, which we expect to be passed on to the consumer. We will also be tracking qualitative, non-monetised benefits, such as an improved prepay experience, quicker and easier switching and better billing arrangements.

5.3 The Government has published a Monitoring and Evaluation Strategy⁵ for smart metering. This sets out how DECC will collect information about progress, costs and benefits, both as a basis for reporting and to identify any further action needed. During the Foundation Stage, monitoring and evaluation is informing our assessment of suppliers' readiness for Autumn 2015, after which most consumers will receive smart meters, and helps us to understand how we need to engage with consumers to deliver benefits. It will enable DECC to review the approaches to consumer engagement being developed by suppliers and the CDB, and identify any changes required.

⁵ <https://www.gov.uk/government/consultations/information-requirements-for-monitoring-and-evaluation-of-smart-meters>

5.4 Once the roll-out is underway, monitoring will enable the robust reporting of progress, the costs incurred and the delivery of benefits. We may also identify risks and opportunities that require further action. Towards the end of the roll-out we expect to evaluate the programme's overall success and draw lessons for the future.

Monitoring, evaluation and review activities in 2013

5.5 During 2013, we have made substantial progress in developing these monitoring and evaluation arrangements, which are being progressively established in the run-up to period when most consumers will receive smart meters.

5.6 We worked with energy suppliers to establish the existing costs of processes, such as meter reading and handling customer switching, where the introduction of smart metering will lead to efficiency savings. This data provides a starting point from which we will be able, in due course, to measure progress on supplier costs and efficiency savings.

5.7 We have continued to monitor the awareness of and attitudes to smart metering of energy bill payers in Great Britain through our "consumer tracker" quantitative survey. During 2013, we published two further waves of the survey following the initial wave published in 2012. Wave 2, conducted in October 2012, was published in February 2013, and Wave 3, conducted during April/May 2013, in September 2013⁶. A fourth Wave, fieldwork for which was carried out during September/October 2013, has also been completed, with the headline findings described below. It is expected that the CDB will take over future responsibility for tracking trends in consumer attitudes and awareness.

5.8 Six in ten (60%) consumers reported that they have heard of smart meters in Wave 4, consistent with Wave 3 awareness levels.⁷ Consumers' interest in having a smart meter personally has remained largely consistent since the first wave of the survey. Support for the national roll-out of smart meters has also remained largely consistent, with three in ten saying they were supportive (31%) in Wave 4. However in Wave 4, opposition (15%) fell compared to previous waves (18% in Wave 3)⁸. Stated reasons for consumers' interest in having a smart meter have also significantly shifted during 2013, with the mentions of budgeting increasing (from 51% to 57% between Waves 3 and 4), and of avoiding waste falling (from 41% to 35% between Waves 3 and 4.) Further information on the survey and more detail on the key findings can be found in Annex 3. A full report will be published early in 2014.

5.9 In the future, we expect the CDB to take over responsibility for tracking trends in consumer attitudes and awareness.

5.10 We have also developed our programme of Foundation stage evaluation, which involves the evaluation of early smart meter installations. This work is also testing the

⁶ <https://www.gov.uk/government/publications/quantitative-research-into-public-awareness-attitudes-and-experience-of-smart-meters-wave-3>

⁷ Levels of reported awareness of smart meters were 60% in Wave 4, 57% in Wave 3 and 50% in Wave 2. Although the difference between Wave 2 and Wave 3 is significant, the Wave 2 and Wave 3 responses to this question are not comparable due to an amendment to the question between these two waves. The difference between the Wave 3 and 4 figures is not significant.

⁸ Any differences quoted are significant at the 95% confidence level.

methods of measuring the consumer energy savings that arise from behaviour change, and the effectiveness of the Consumer Engagement Strategy (see Chapter 5), which we will use to measure consumer benefits over time. This evaluation consists of a face-to-face, in-depth survey, conducted by Ipsos MORI, of the behaviour, attitudes and experience of 4,000 residential consumers with and without smart meters and DECC's own analysis of data from well over 10,000 installations of smart meters to measure actual changes in consumption following installation. During 2013, we extended the scope of this Early Learning Project to include a full synthesis⁹ of the findings, looking both at progress to date and also, crucially, how consumer benefits can be maximised in the future. The extended project will interpret the findings of our survey and measurement of changes in tandem with a wide range of other evidence from Great Britain and abroad to help us understand how the objectives of the Consumer Engagement Strategy, particularly around energy saving, can best be achieved. It will therefore report, not only on what has happened to date, but also how behaviour change operates and how it can best be supported. The extended project will report in June 2014.

- 5.11 Enhanced customer experience of, and engagement with, energy and the energy market are increasingly seen as a major benefit area. Smart metering will bring a range of new benefits such as an end to estimated readings and an improved ability to budget, which is seen by consumers as an important benefit of smart meters. Smart Metering will in particular improve the experience for prepay customers, who will be able to top up remotely without the need to go to a payment point. We recently commissioned qualitative research into the benefits of smart prepay to inform our understanding of consumer benefits in this area. This will be published in the first half of 2014.
- 5.12 The delivery of consumer benefits will be facilitated by the development of new products and services and other improvements in the energy market (e.g. faster switching) that will occur during the roll-out of smart meters. We expect to see a growing range of benefits emerging over time, supported by these new products and services that suppliers and others can deliver using smart metering. As the box below shows, these are already starting to appear. We are also commissioning research into the future range of products and services that will be facilitated by smart metering, focusing initially on the non-domestic building sector – the initial project will report in Spring 2014.
- 5.13 During 2013, the programme has moved into a process of active monitoring and review. We have been developing the full reporting and governance arrangements to manage all of these benefits and to report on progress over time. This requires the development of a comprehensive and robust monitoring and evaluation methodology. We are also reporting on initial meter installations and providing other information about suppliers' plans and progress, as described in Chapter 4.

⁹ Being undertaken by a consortium including ECI Oxford University, the Tavistock Institute and the University of Ulster

Energy present

Smart meters bring benefits now.

In October 2013, E.On and Opower launched the online Saving Energy Toolkit, which is designed to help customers to understand and transform their energy use. The Toolkit shows customers where and when energy is being used and breaks down energy costs by letting them access:

- simple graphs showing how their monthly energy use compares with that of 100 customers with homes of a similar size and type, and against the most energy efficient homes in their local area
- a 'what uses most' chart revealing how energy is currently being used (split between heating, lighting, hot water, appliances and 'other')
- 'my energy use' charts showing how energy use changes month-by-month
- a 'compare monthly costs' section showing how this month's energy costs compare with the previous month's, and how they've been affected by weather and energy consumption
- tailored hints, tips and energy goals, integrating other information to help reduce energy use.

Energy future

And smart meters will unlock more benefits in the future.

British Gas is part of the Consumer-Led Network Revolution project, which is running trials with 12,000 customers to test new, low-carbon technologies that can support smart grids. Among other things, the project has:

- trialled a three-rate time-of-use tariff with 600 customers in Yorkshire and North-East England. Customers have used 10% less electricity during the more expensive peak period compared with a 'control' group, and 95% of participants would choose a smart meter-enabled multi-rate tariff over a standard tariff if it were available
- supported an electric vehicle trial offering smart meter customers with electric vehicles a twenty-hour off-peak period to encourage recharging outside peak hours
- combined smart meters with 'smart' washing machines that do not operate during peak periods. 83% of trial customers expressed interest in a smart appliance that would schedule their operation according to a particular tariff rate.
- tested air-source heat-pumps, which extract heat from outside air in the same way that a fridge extracts heat from its inside. British Gas can remotely turn down electricity consumption of pumps for specified periods throughout the year in response to a fault signal from the electricity network without affecting the thermal comfort of the home.

Consumer engagement

- 5.13 Effective consumer engagement will have an essential role to play in overcoming potential barriers to delivering the benefits of smart metering. It will, for example, build consumer confidence in the installation of smart meters and increase consumers' willingness to change their behaviour to enable them to use energy more efficiently.
- 5.14 The Government's Consumer Engagement Strategy¹⁰ was published in December 2012. The aims of the Strategy are to:
- Build consumer support for the roll-out by building confidence in benefits and by providing reassurance on areas of consumer concern.
 - Deliver cost-effective energy savings by helping all consumers to use smart metering better to manage their energy consumption and expenditure.
 - Ensure that vulnerable and low-income consumers can benefit from the roll-out.
- 5.15 The first part of the Strategy is dedicated to understanding what constitutes effective engagement in the context of smart metering. It identifies four main engagement levers for energy-saving behaviour change:
- Direct feedback in near-real-time (through an In-Home Display).
 - Indirect feedback (aggregated or non-real-time data, e.g. comparative information on bills).
 - Advice and guidance on energy and energy reduction.
 - Motivational campaigns designed to raise energy literacy and motivation to reduce consumption.

Roles and responsibilities

- 5.16 Suppliers will have the primary consumer engagement role as the main interface with their customers before, during and after installation. Supplier engagement at the point of installation will be guided by the Smart Metering Installation Code of Practice (see Chapter 6: Protecting Consumer Interests).
- 5.17 Where suppliers inform the network operators and consumer groups of the locations and timings of installations, planning and targeting of third party activity such as consumer engagement ahead of installations) will enable better management of resources and avoidance of significant peaks and troughs in demand for third party services. As smart meters will be rolled out in different places at different times, consumer and local groups will have the opportunity to share lessons learnt.
- 5.18 Supplier engagement will be supported by a programme of centralised engagement undertaken by a new Central Delivery Body (CDB), which was set up by larger suppliers in accordance with requirements set down in licence conditions.

¹⁰ DECC, *Smart Metering Implementation Programme: Government Response to the Consultation on the Consumer Engagement Strategy* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43042/7224-gov-resp-sm-consumer-engagement.pdf (December 2012)

5.19 The Consumer Engagement Strategy highlighted the fact that trusted third parties, such as charities, consumer groups, community organisations, local authorities and housing associations would also have an important role to play in delivering effective consumer engagement. It recognised however that many of these groups would not have the resources to work with each individual supplier. We therefore anticipate that the CDB will facilitate and coordinate third parties' involvement by producing materials for them to use when engaging consumers or, potentially, by working with them to undertake local engagement campaigns. The CDB will be publishing its Consumer Engagement Plan in December 2013.

The Central Delivery Body

The CDB was set up by larger suppliers at the end of June 2013 to:

- Build consumer confidence in the installation of smart meters.
- Build consumer awareness and understanding of how to use smart meters and the information obtained from them.
- Increase consumer willingness to use smart meters to change their behaviours so as to enable them to reduce their energy consumption.
- Help vulnerable, low-income and prepay customers to realise the benefits of smart metering systems while continuing to maintain an adequate level of warmth and meet their other energy needs.

The objectives apply to domestic consumers and also to non-domestic microbusiness consumers (where domestic engagement material can be cost-effectively adapted and supplemented to meet microbusiness engagement needs.)

The larger suppliers are responsible for funding the CDB (smaller suppliers contribute to fixed operating costs) and for ensuring it achieves its objectives. The CDB is governed by a board with an independent chair and includes consumer representatives. The Board is required to act in an impartial manner.

5.20 We have also had a continuing role in engaging consumers. We are, for example continuing to build the evidence base on what constitutes consumer engagement in a smart metering context. Research to date has primarily focused on gaining a better understanding of public awareness and attitudes (as described in 5.8). We are also undertaking a series of behaviour change trials to improve understanding of how different types of advice, guidance and motivations can help consumers better manage their energy consumption. These are due to conclude in Summer 2014.

5.21 We have continued to play a role in directly engaging consumers by ensuring that smart metering is part of wider DECC narratives and that accurate information on smart meters is easily accessible for consumers and any misinformation is corrected. And the Government has been working to help prepare organisations such as charities, community groups, housing associations, local authorities and consumer bodies to work with the CDB.

Chapter 6 – Protecting Consumer Interests

Introduction

6.1 Consumers are at the heart of smart metering and the Government is working with consumer groups to address any concerns around smart metering and to develop a framework of rules that protect customers. Ensuring a positive experience of smart metering in turn will increase engagement with smart meters, which is necessary to realise the full set of benefits.

The installation visit and the Smart Metering Installation Code of Practice

6.2 The Government has required suppliers to develop and comply with an Installation Code of Practice governing the consumer experience throughout the smart meter installation process at both domestic and micro-business premises to give consumers confidence in the installation process¹¹. This will ensure that consumers receive an appropriate standard of service and are treated fairly and transparently. Among the key requirements of the Code, which was approved by Ofgem and came into operation in June 2013 is that suppliers:

- Will explain the metering system and how customers can use the IHD to improve energy efficiency, and signpost customers to additional sources of energy efficiency information;
- Will not conclude any sale at the domestic installation visit;
- Will need prior domestic customer consent to carry out face-to-face marketing at the installation visit, recognising that this could be a good opportunity to explore ways to increase household energy efficiency;
- Will have to identify and meet the needs of vulnerable customers (which may also help suppliers to deliver initiatives such as the Affordable Warmth element of the Energy Company Obligation, thus providing a more comprehensive and valuable package for customers); and
- Will not charge domestic customers upfront or separate costs for standard smart metering equipment, including the IHD.

¹¹ Licence conditions for a code of practice for the installation of smart electricity and gas meters – Government response to consultation, DECC, April 2012: <http://www.decc.gov.uk/assets/decc/11/consultation/smart-metering-imp-prog/4841-government-response-to-licence-conditions-for-inst.pdf>

Safety

- 6.3 Our current assessment is that the types of safety risk associated with smart meter installations are essentially the same as those for any other meter installation. The energy industry will therefore continue to operate within the existing rules governing safety - for example, gas meter installers will need to be registered with Gas Safe.
- 6.4 However, the scale of the installation activity during the smart meter roll-out warrants additional action, and industry is embedding new practices ahead of Autumn 2015, after which most consumers will receive smart meters. It is doing so principally through amendments to the Meter Operation Code of Practice Agreement (MOCOPA) for electricity and the Meter Asset Manager's Code of Practice (MAMCOP) for gas.
- 6.5 The Installation Code of Practice includes further commitments relating to the training and accreditation of meter installers. In addition, the smart metering programme's operational issues stakeholder group maintains a safety log that summarises issues that arise and the actions taken to mitigate them.

Vulnerable customers

- 6.6 Consumer vulnerability can change depending on the design of products and services as well as the personal circumstances and characteristics of consumers. It is important that, in rolling out smart meters, account be taken of the particular needs of customers, so that all are able to enjoy the benefits of smart metering. The need to reduce barriers and risks face by individuals has therefore been addressed regulatory requirements for individual areas of programme activity, including the rules governing the installation visit, the design of in-home display, and the Central Delivery Body, which must take into account the need to identify, and meet the needs of, vulnerable customers. These have been described in more detail elsewhere in this report.

Prepay customers

- 6.7 Smart metering can transform the prepay experience. Topping up a smart meter in prepay mode should become as easy as topping up a mobile phone; there will no longer be a need to change the meter to switch between prepay and credit tariffs; and suppliers will be able to offer a range of additional customer services. The information provided by the In-Home Display, will help prepay customers better to understand and manage their energy use.
- 6.8 Tailored engagement will be important to enable prepay customers fully to realise the benefits of smart metering. The Smart Metering Installation Code of Practice specifically requires installers to demonstrate prepayment functionality as part of the installation visit, and the Central Delivery Body has a specific objective of helping prepay customers to realise the benefits of smart metering. DECC is already working closely with stakeholders, including Consumer Futures and the larger energy suppliers, to develop a prepay plan, setting out the key steps to deliver smart prepay by Autumn 2015. All of the larger energy suppliers should be ready to offer basic services to both credit and PPM customers in Autumn 2015 to help ensure that both credit and prepay customers benefit from smart metering early in the roll-out.

Data access and privacy

6.9 Smart meters will lead to a step-change in the amount of information that is available about energy consumption, which is key for realising benefits for consumers, suppliers, network companies and others. The Government has used international best practice and expert advice to ensure 'privacy by design', meaning that privacy issues are considered and embedded into the programme from an early stage.

6.10 The regulations¹² regarding data access and privacy for domestic customers were put into place in December 2012 and came into force in June 2013. They govern the ways in which different parties can access energy consumption data, the purposes for which they can use it and the choices that consumers will have about this. The core principle is that consumers should have control over their energy consumption data, apart from where it is required for billing or other regulated duties. For instance, suppliers will be able to access monthly data for billing and other regulated purposes, but will only be able to access daily data if the customer has not opted out or half-hourly data if the customer has opted in. Network operators will be able to access energy consumption data, including half-hourly energy consumption data for regulated purposes, without consent, if they have had plans for aggregation approved to address potential privacy concerns. Smart metering equipment will ensure that consumers are able easily to access their own energy consumption data and share this with third parties (such as switching sites), should they choose to do so. There are separate data access rules in the non-domestic sector that reflect the different make-up of the market.

6.11 In June 2013 Energy UK published a Data Guide (see box at end of this chapter), which explains clearly to customers which data will be accessed from the smart meter, for which purposes, and what choices customers have about this.

Security

6.12 The security of the smart metering system remains a priority for Government and is at the heart of the programme's design work. The security architecture has been developed through consultation, including close engagement with experts in industry and relevant Government agencies, including CESG, the Government's National Technical Authority for Information Assurance. It is designed to ensure that risks are addressed and that there are no single points of failure.

6.13 Security requirements for all aspects of the smart metering system have been developed and are being drafted into the regulatory framework. They includes requirements on smart metering equipment, the central communications infrastructure, energy suppliers and other industry participants to apply security controls to mitigate the risks of cyber threats.

6.14 Security requirements for smart metering equipment itself are included within the SMETS. Security obligations on energy suppliers and other industry participants are or will be set out in the Smart Energy Code or in licence conditions. Security obligations for energy suppliers during the Foundation phase were published in amendments to licence conditions in March, and in October the Government published for consultation draft requirements for inclusion in the Smart Energy Code.

¹² Smart Metering Implementation Programme: Data access and privacy - Government response to consultation, DECC: December 2012: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43046/7225-gov-resp-sm-data-access-privacy.pdf

6.15 In July, in its response to the SMETS 2 consultation, the Government published plans for security governance to ensure that arrangements will be adapted to address evolving risks and remain proportionate over time. Work is now underway to ensure that these are included within a future version of the SEC. Industry compliance with security obligations will be subject to an independent assessment.

Electromagnetic emissions

6.16 Smart meters use radio waves to allow remote readings to be taken from gas and electricity meters. Radio waves are very common in the environment and are used in radio and television broadcasts, wireless computer networks, pagers, radar, and cordless and mobile phones. Smart meters are covered by UK and EU product safety legislation, which requires manufacturers to ensure that any product placed on the market is safe. Manufacturers comply with the legislation by assessing and, if necessary, testing equipment according to agreed EU standards. The standards follow guidelines drawn up by the independent International Commission on Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP guidelines are based on a critical in-depth evaluation of the published scientific literature and represent the international consensus about this evidence.

6.17 The independent adviser to Government on public health, Public Health England (PHE), has advised that the evidence to date suggests that exposures to the radio waves produced by smart meters are low in comparison with the ICNIRP guidelines and do not pose a risk to health¹³. PHE will conduct independent assessments of smart meters as the technology is rolled out, working closely with DECC to identify the relevant technologies. Our ambition is for all homes to have smart meters by the end of 2020, but there will not be a legal obligation on individuals to have one.

6.18 Smart meters will operate in the licence-exempt radio spectrum, which is also used by other applications, such as WiFi. Technical rules govern equipment radio transmissions in these bands. These rules have been drafted by international standards and technical committees to take into account the need for different applications to co-exist and operate in the licence-exempt spectrum. All equipment operating in the spectrum must comply with the technical rules, and this is achieved through type-testing of products before they are put on the market. This applies to all equipment, including smart meters, WiFi devices etc. Adherence to rules ensures that the effects of interference are minimised.

Switching Supplier

6.19 Smart meters will ultimately make switching suppliers easier and quicker. During the current Foundation Stage of the programme, while the systems are being built to make this possible, it is important that consumers should not have any problems in switching energy company if they have a smart or smart-type meter. Ofgem has introduced rules designed to help domestic consumers understand if the smart services they are receiving will be maintained when they switch supplier¹⁴. The new rules also remove some of the barriers that could prevent the supplier from operating the meter, if it wishes to do so, and will keep customers better informed about the choices available to them. In most cases the meter can

¹³ understand if the smart services they are receiving will be maintained when they switch

¹⁴ <http://www.ofgem.gov.uk/Markets/sm/metering/sm/Documents1/smart%20meters%20-%20effective%20switching.pdf>

still be used in 'traditional' mode if the new energy supplier cannot support the smart functionality at this stage.

The Data Guide

Smart meter data - a guide to your rights and choices

The key facts

- Smart meters are being installed in every home in Great Britain between now and 2020. Your energy supplier will tell you when they plan to install your smart meter between now and then
- The Government is overseeing the rollout of smart meters and has set out the rules for the management and use of data collected from your smart meters
- Your Energy Supplier will continue to hold your personal details on your account

What's new?

- Smart meters record more information than current gas and electricity meters. They will store the amount of energy you have used in each 30 minute period
- Your energy supplier will collect meter readings remotely
- You can choose how much of this information you share with your energy supplier
- If you do nothing your supplier can collect a daily meter read

The choices you can make

- How much data your energy supplier collects from your smart meter, e.g. monthly, daily or half-hourly meter reads
- Whether your supplier shares details about your energy consumption with other organisations;
- Whether your supplier can use your meter reads for sales and marketing purposes;
- How you can access information about your energy use and get the most benefit from it
- Once you have made your choice on any of these, you can change your mind at any time

For more details about:

- The smart meter roll-out
- Making use of your smart meter data
- How your data will be used and who it will be shared with
- Making any of the choices above
- Any other questions about your data you might have

Please contact your energy supplier.

For independent advice about your rights and choices relating to your personal information contact The Information Commissioner's Office at www.ico.org.uk or via the ICO Helpline on 0303 123 1113.

Chapter 7 – Opportunities

7.1 Smart metering will bring savings to consumers, suppliers, networks but also offers wider opportunities for the UK economy.

Impact on UK jobs and growth

Training and skills

7.2 Smart metering is expected to create new employment opportunities, with many of those jobs being UK-based. A number of jobs, including those for installers, support staff and managers have already been created, and this number is expected to rise significantly as over 50 million meters are installed across Great Britain. The National Skills Academy for Power (NSAP) has estimated that, by 2017, at least 6,000 meter installers will be required, together with almost 1,000 network staff. However, the final peak requirement may reach 10,000 people (three times the existing levels).

7.3 NSAP has led the development of a level 2 diploma in Smart Metering, and accreditation is already available through two awarding bodies. Nine providers are already offering training, and four others are ready to do so shortly. In some cases, these providers offer training at more than one site. The diploma is designed to ensure a consistent set of skills for all new smart meter recruits - it takes at least thirty weeks to qualify as a dual-fuel installer. Approximately £3 million is available to fund smart meter apprenticeships via the Energy and Utility Skills (one of the Sector Skills Councils) framework, which was introduced earlier this year.

7.4 Whilst energy suppliers will create new, higher-skilled jobs, there are likely to be losses in lower-skilled roles such as meter-readers, and, over time, a reduced need for call centre staff to deal with queries and complaints, many of which are related to billing. The scale of reductions will depend on the way in which employers deal with their existing metering and customer support workforces.

Innovation, design and manufacturing

7.5 The roll-out will require a new generation of metering equipment - 53 million smart electricity and gas meters, a substantial number of In-Home Displays and new Consumer Access Devices. This is a significant opportunity, worth an estimated £6.98bn in metering equipment costs and their installation and operation. Meter manufacturers and energy supplier companies have made a series of large contract and development announcements over the past few months, including British Gas's agreement with Landis+Gyr to provide smart meters,

First Utility's appointment of Siemens to deliver, install and maintain domestic meters and the Siemens and Green Energy Options (GEO) project to bring smart metering into multi-dwelling and high-rise buildings. Not only is this all important for the successful roll-out of smart meters, it is also good for the economy and employment.

7.6 The introduction of smart meters may also enable the development and growth of other sectors, for example, the high value energy services market - companies providing energy and home monitoring hardware and services

Smart meters - delivering jobs and opportunities

In September 2013, British Gas and Landis+Gyr announced a £600 million contract, running to 2020, for the provision of the majority of the 16 million smart meters to be installed by British Gas. The contract, the biggest of its kind in the world, will create economies of scale - and thus reduced costs - in meter production, lead to the expansion of Landis+Gyr's UK operations and help the UK to become a centre of smart metering excellence. Landis+Gyr expects to double its 600-strong UK workforce and extend its existing manufacturing facilities. In addition, British Gas announced the recruitment of 500 more smart metering installers during 2014, adding to the 1,000 jobs already created.

Also in September 2013, npower and Green Energy Options Ltd (geo) of Cambridge announced that npower had selected geo's Duet II Smart Energy Display, which has been designed and developed in the UK, as the means for customers to see information about their energy use. The Duet II meets the requirements of SMETS.

Annex 1 - FAQ

1. What is a Smart Meter? (See GB smart metering system)

Smart meters are the next generation of gas and electricity meters and can perform a range of intelligent functions. Unlike traditional meters which have to be read physically to give a customer or supplier information about how much energy has been used, they automatically pass accurate meter readings to energy suppliers and support new functions including enabling smart appliances. Domestic customers will be offered an In-Home Display (IHD) linked to their smart meter, enabling them to see what energy they are using and how much it is costing.

2. Why are smart meters being introduced? (see chapter 1)

Smart meters are an important step towards a modern and efficient gas and electricity system which will bring a wide range of benefits. Consumers will have near-real time information on their energy consumption to help them control their energy use, and avoid wasting energy and money; suppliers will have access to accurate data for billing and to improve their customer service; and energy networks will have better information upon which to manage their current activities, and assist the move towards smart grids which support sustainable energy supply.

3. Who is in charge of the smart meter roll-out? (see chapters 2 and 3)

The Government is requiring energy companies to replace 53 million meters with smart electricity and gas meters in all domestic properties, and smart or advanced meters in smaller non-domestic properties. It is setting rules to ensure that they do this in a way that is in the interests of consumers, including rules around data access, security, technical standards for the smart metering equipment, and meeting the needs of vulnerable consumers.

4. How much will rolling out this new technology cost? (see chapter 4)

DECC's latest Impact Assessment published in January 2013 estimates a positive net present benefit of £6.7 billion over the period to 2030, by delivering total benefits of around £18.8 billion and costs of around £12.1 billion.

Taking into account the costs and savings to energy companies, as well as energy savings to consumers, we expect the average dual fuel household to realise an annual bill saving of around £24 a year by 2020, rising to £39 a year by 2030, in comparison to a situation without a smart meter roll-out. For non-domestic dual fuel consumers, we expect annual bills savings of £164 by 2020.

5. When will I get a smart meter? (see chapter 4)

Most householders will have smart meters installed between 2015 and 2020, although some energy companies are starting to install smart meters now. If you are interested in getting a smart meter now, shop around and contact energy companies to see what their plans are.

6. How much will it cost to get a smart meter installed?

Domestic consumers will not be charged separately for a smart meter or for the In-Home Display. Under current arrangements, domestic consumers pay for the cost of their meter and its maintenance through their energy bills and this will be the same for a smart meter.

7. Do I have to have a smart meter?

Smart meters will be rolled out as standard across the country by 2020. But there will not be a legal obligation on individuals to have one. The roll-out of smart meters is an important national modernisation programme. This will bring big benefits to consumers and the nation. We expect consumers to welcome the benefits smart meters will bring and we aim for all homes and small businesses to have smart meters by 2020.

8. Who will be able to see my energy consumption data? (see chapter 6)

Consumers will have a choice about how their energy consumption data is used, apart from where it is required for billing and other regulated duties. Consumers will be able to see their near-real time energy consumption data on their In-Home Display, and to download more historic data from their home area network. They will be able to share data with third parties (such as switching sites) should they choose to.

9. Are smart meters safe? (see chapter 6)

Smart meters are covered by UK and EU product safety legislation, which requires manufacturers to ensure that any product placed on the market is safe. Public Health England (PHE), the independent adviser to the UK Government on public health, provides advice and information on the health implications of smart meters, as it does for a range of technologies commonly found in homes and businesses across the UK. Further information can be found on the PHE website:
<https://www.gov.uk/government/organisations/public-health-england>

10. Will smart meters support pre-payment? (see chapter 6)

A smart meter can work in pre-payment or credit mode. Consumers can agree with their energy company to pay the best way that suits them. Pre-payment consumers will see some particular benefits from having a smart meter. For example:

- their energy company may offer new and more flexible ways of topping up their meter, including the ability to top-up over the phone or online;
- the smart meter can be set so that consumers do not run out of credit at night and won't be left without power when the shops are shut.

11. Where can I get more information?

Further information about smart meters can be found on the Gov.uk website:

<https://www.gov.uk/government/policies/helping-households-to-cut-their-energy-bills/supporting-pages/smart-meters>

Annex 2 – International Learning

1. The roll-out of smart metering in Great Britain is an ambitious programme involving the replacement of both electricity and gas meters with a view to delivering benefits to consumers, suppliers and networks. The roll-out will take place in a market where there is both full competition in energy supply and in metering services, which is a different environment from that in many other countries.
2. We fully recognise the value of learning from individual elements of smart meter programmes taking place in other countries. More than 50 countries are installing or planning to install smart metering equipment, with individual states in the US, Canada and Australia having their own roll-out programmes. A small number of countries have completed smart meter roll-outs and DECC has continued its engagement with these and other programmes. In addition, DECC continues to undertake further research to capture good practice, identify issues and see how they are overcome and compare and contrast our programme with those in other countries.
3. We have looked at the motivations of other countries for installing smart meters and their strategies for consumer engagement, including handling of areas of concern such as data access and privacy which can affect the successful delivery of the programme. In Great Britain we are placing a much stronger emphasis on consumer benefits and the potential for energy efficiency savings than many other countries, where the primary benefits are seen as improving the management of supply, reducing losses and reducing administrative costs.

Snapshot of smart meter roll-outs in other countries

Europe

4. Great Britain's smart metering roll-out is being carried out under powers included in the Energy Act 2008¹⁵. The EU has subsequently set rules in this area. The Third Package¹⁶ requires Member States to roll out intelligent metering systems, although a decision to proceed with a roll-out may be subject to a cost/benefit analysis. Where metering systems

¹⁵ Energy Act 2008, The National Archives, November 2008: <http://www.legislation.gov.uk/ukpga/2008/32/contents>

¹⁶ Directive concerning common rules for the internal market in electricity, Official journal of the European Union, July 2009: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0055:0093:EN:PDF> and Directive concerning common rules for the internal market in natural gas, Official Journal of the European Union, 2009: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0094:0136:en:PDF>

are rolled out, Member States must ensure that at least 80% of consumers have intelligent electricity metering systems by 2020. Member States are required to prepare a timetable for installation of intelligent gas metering systems, but the Directive does not set a completion date. 16 Member States (Austria, Denmark, Estonia, Finland, France, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Poland, Romania, Spain, Sweden and UK) have decided in favour of a wide-scale roll-out of smart electricity metering by 2020 or earlier.

Denmark

5. In September Denmark announced plans for every house to have a smart electricity meter by 2020. Approximately half of all Danish homes already have a smart meter, having had one installed before the announcement of a mandated roll-out. A major motive for the Danish roll-out is to increase competition in the electricity market. The Danish Ministry of Climate and Energy anticipates a 2% reduction in electricity consumption *per year for an average homeowner* as a result of the roll-out.

France

6. France aims to roll out 35 million smart electricity meters by 2020 (90% of customers). Its roll-out will begin by the end of 2014 and it is expected that approximately 3 million meters will be installed in households by 2016, followed by a further 32 million before the end of 2020. A large (250,000 installations) year-long pilot project, completed in March 2011, tested the installation process, the communications system and meter interoperability. Gas smart metering is less advanced, but a smaller scale pilot scheme featuring 18,500 installations was completed in June 2011 and may lead to a roll-out of 11 million smart gas meters between 2014 and 2020.

Germany

7. Germany has not formally announced whether it plans to require that smart electricity meters be rolled out, *en masse*, to 80% of homes by 2020, as required under the Third Package. Cost/benefit analysis by Ernst & Young has indicated that a mass roll-out of smart metering before 2020 would have a negative economic impact. Therefore, smart meters are only rolled out on a voluntary basis - often when an old or non-functioning meter needs to be replaced and when buildings are refurbished. This approach has not resulted in the deployment of significant numbers of smart meters to date. There has been considerable hesitation by consumers over installation owing to substantially higher fees for smart meters covering both the cost of the meter and the installation.

Republic of Ireland

8. The Republic of Ireland aims to roll out 2.2 million smart electricity and 600,000 smart gas meters to all domestic properties and a large number of businesses by 2019. The Irish Government chose to roll out smart meters following the positive results of comprehensive electricity and gas smart metering trials and associated cost/benefit analysis

Italy

9. Italy was the first EU Member State to opt for a large-scale smart metering roll-out and, by 2011, all 36 million electricity customers in Italy had received a smart meter. The roll-out decision was made by the major electricity company, Enel. Enel's main reason for the roll-out was initially to prevent electricity theft and make operating processes more efficient, but it is now moving towards customer oriented benefits through energy savings.

Netherlands

10. The roll-out of smart gas and electricity meters in the Netherlands began in 2012 and is intended to reach 7.6 million domestic and small business users, with a large part of the roll-out complete by 2015. The Government's aim is for all households to be offered a smart meter by 2020. The objectives of the Dutch programme include enabling greater energy market competition through easier switching for customers, improving operational efficiency and supporting energy savings.

Spain

11. The Spanish programme aims to roll out 26 million smart electricity meters to domestic customers by the end of December 2018. The Government and energy suppliers identified the main benefit of the roll-out as the ability remotely to change the limits on the amount of energy that the household can draw upon. In 2006, Spain introduced a law to ensure that all meters installed in new homes from July 2007 would have time-of-use functionality and remote management capability.

Sweden

12. Sweden's first smart metering pilot studies took place in 2001. By July 2009, it had become the first country to install smart meters for all electricity customers. EU targets for smart meter roll-out, in addition to the decision to require monthly meter readings – spurred the deployment of the technology. The Swedish system uses power lines to transmit readings and the transmission of meter data is delayed by between one and two hours. As a result real-time information is not available to electricity customers. Sweden is currently undertaking pilot projects to evaluate the potential of time-of-use tariffs and other new services.

Worldwide

India

13. India plans to roll out 150 million smart electricity meters across five regions between 2013 and 2025 (almost three times the number of smart meters to be rolled out in Great Britain). Smart meters are seen as a means of increasing the reliability of the energy grid, will reduce the dependence on fossil fuels such as coal and gas, provide energy for those living in rural areas and reduce the persistent peak shortages of energy for the population.

USA

14. There has been significant smart metering activity in the US. Almost 40 per cent of households in the United States now have smart meters with over 45.8 million smart meters having been deployed through to July 2013. . For example, the state of Maine has rolled out 625,000 smart electricity meters to domestic customers and a range of small to large non-domestic customers within a two year period. The success of the roll-out programme was enabled by early testing and trialling of equipment, consumer engagement to ensure

approvals and customer acceptance and the communications network being made available before the roll-out began.

Victoria, Australia

15. The Victorian State Government required that smart electricity meters be installed for 2.5 million residential and small business customers by the end of 2013. One of the drivers for the Victorian roll-out was the desire to improve the efficiency of the electricity distribution network after significant power outages. Another feature of the Victoria roll-out is the ability of customers to receive data about their energy usage at half-hourly intervals, enabling them potentially to reduce their consumption during peak times. In-Home Displays became available to Victorian residents in July 2013, and in September 2013 optional flexible pricing was introduced.

Annex 3 – Quantitative Research into Public Awareness, Attitudes, and Experience of Smart Meters – Wave 4 findings

Background to the survey

1. DECC commissioned Ipsos MORI to undertake research to measure the public's views on smart meters and IHDs, including their information needs. The study comprises biannual nationally representative surveys, conducted face-to-face in homes across Great Britain.
2. Four waves have been completed: Wave 1 in April 2012, Wave 2 in October 2012, Wave 3 in April/May 2013 and Wave 4 in September/October 2013. All four survey waves have been conducted on Ipsos MORI's weekly omnibus, Capibus, which is conducted in-home using face-to-face interviewers and comprised over 2000 interviews per wave. The respondents were all adults who were at least jointly responsible for paying their household energy bills. Data were weighted to provide nationally and regionally representative results.
3. Any differences highlighted in the report text are statistically significant, taking account of their confidence intervals. Any differences quoted are significant at the 95% confidence level.
4. Full Wave 4 findings will be published on gov.uk in early 2014, and supporting data tables for the findings quoted in this report are included below. Reports outlining findings from Wave 1 – 3, which also include further information on the survey methodology, are available on the gov.uk website.¹⁷

5. Data tables

6. Please note that:

7. * indicates a significant difference with the previous wave at the 95% confidence level

8. - indicates no available data as the question was not asked until later waves of the survey

¹⁷ <https://www.gov.uk/government/publications/quantitative-research-into-public-awareness-attitudes-and-experience-of-smart-meters-wave-3>

9. Where totals do not sum this is due to computer rounding or multiple response answers.

Table 1 – Awareness and reported ownership (QAW1)	Wave 1	Wave 2	Wave 3	Wave 4
SINGLE ANSWER. DO NOT READ OUT. Before today, had you heard of smart meters? IF YES ASK: Do you have one?				
<i>Base: GB adults aged 18+ who are at least partly responsible for paying household energy bills</i> <i>CHANGE TO THE IMAGES SHOWN AT THIS QUESTION IN WAVE 3: responses to this question from Waves 1 and 2 are not directly comparable to Waves 3 and 4</i>	2,396	2,159	2,210	2,333
	%	%	%	%
Yes, I have one	5	5	9	9
[ADJUSTED FIGURE FOR SMART METER OWNERSHIP]	2	2	2	3
Yes, but I do not have one	44	44	48	51
YES (SUMMARY)	49	50	57	60
No – I have never heard of them	51	50	43	40

Table 2 – Support for the roll-out (QUN5)	Wave 1	Wave 2	Wave 3	Wave 4
SINGLE ANSWER. SHOWCARD (R) To what extent do you support or oppose the installation of smart meters in every home? Please read out the letter that applies.				
<i>Base: GB adults aged 18+ who are at least partly responsible for paying household energy bills</i>	2,396	2,159	2,210	2,333
	%	%	%	%
Strongly support	9	7*	9*	10
Tend to support	23	22	23	21
No feelings either way	45	48*	49	53*
Tend to oppose	12	11	9	9
Strongly oppose	8	8	9	6*

Don't know (NOT ON SHOWCARD)	4	4	1*	1
SUPPORT (SUMMARY)	32	29	32*	31
OPPOSE (SUMMARY)	20	19	18	15*

Table 3 – Interest in having a smart meter installed (QUN4)	Wave 1	Wave 2	Wave 3	Wave 4
SINGLE ANSWER. SHOWCARD (R) Smart meters are installed by the energy suppliers. You can still switch energy supplier after the installation. To what extent would you be interested, or not, in having a smart meter installed in your home in the near future?				
<i>Base: GB adults aged 18+ who are at least partly responsible for paying household energy bills and have not had a smart meter installed</i>	2,267	2,049	1,984	2,111
	%	%	%	%
Very interested	9	9	9	9
Fairly interested	32	31	30	31
Not very interested	25	27	28	26
Not at all interested	28	27	31*	31
Don't know (NOT ON SHOWCARD)	5	5	2*	3
INTERESTED (SUMMARY)	42	40	38	39
NOT INTERESTED (SUMMARY)	54	55	59*	57

Table 4 – Reasons for interest in having a smart meter (QUN4a)	Wave 1	Wave 2	Wave 3	Wave 4
MULTIPLE ANSWER. DO NOT READ OUT Why do you say that you are interested in having a smart meter installed in your home in the near future? Any other reasons?				
<i>Base: GB adults aged 18+ who are at least partly responsible for paying household energy bills and are interested in receiving a smart meter</i> <i>NEW</i> <i>QUESTION IN WAVE 3</i>	-	-	725	793
	-	-	%	%

Avoid wasting gas and electricity	-	-	41	35*
Help me to reduce my energy bills	-	-	27	32
Help me to budget	-	-	24	25
See what I'm spending on electricity and gas in real time/as I go	-	-	13	15
BUDGETING (SUMMARY)	-	-	51	57*

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