



National Audit Office

Report

by the Comptroller
and Auditor General

Department of Energy & Climate Change

Update on preparations for Smart Metering

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Department of Energy & Climate Change

Update on preparations for Smart Metering

Report by the Comptroller and Auditor General

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Comptroller and Auditor General
National Audit Office

30 May 2014

This briefing focuses on the remaining risks and challenges for the Smart Metering Implementation Programme, to complement the Department of Energy & Climate Change's progress update report to the Committee of Public Accounts.

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Contents

Summary 4

Part One

Progress against plans 12

Part Two

The economic case 21

Part Three

Governance and risk management 33

Appendix One

Impact assessments, March 2011 to
January 2014 36

Appendix Two

Our evidence base 37

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Summary

Scope of the briefing

1 The Department of Energy & Climate Change (the Department) is leading the Smart Metering Implementation Programme (the Programme). Under the Programme, energy suppliers must replace 53 million meters in homes and small businesses across Great Britain with smart electricity and gas meters by 2020. The Comptroller and Auditor General reported on the Department's preparations for the roll-out of smart meters in 2011.¹

2 The Department provided an update report to the Committee of Public Accounts on 31 March 2014.² The Department's report sets out its work to prepare for mass roll-out from 2015 and its responses to the Committee's recommendations.³ We have prepared this briefing, which focuses on the remaining risks and challenges for the Programme, to complement the Department's report. We have reviewed the progress the Department describes and evaluated the reasons for, and impacts of, any changes to the economic case for the Programme, based on a review of key documents and interviews with Department officials, key industry participants and stakeholders conducted in March and April 2014. We did not fully audit the data the Department provided or statements the Department made and have not sought to come to a value-for-money conclusion. Our methodology is set out in Appendix Two.

Overview

3 The economic case for the Programme remains positive: it is expected to cost £10.9 billion and bring economic benefits of £17.1 billion. The Department has provided strong Programme leadership. It has made good progress with Ofgem in preparing for mass roll-out, and has established much of the necessary regulatory, technical and commercial framework needed to pave the way for passing responsibility to industry. The Department told us that all major suppliers have used the foundation stage to test and trial smart metering equipment, but four of the big six suppliers have not yet installed a significant number of meters. Significant risks remain including potential consumer resistance to smart meters, the need for industry to resolve outstanding technical issues, the readiness of suppliers, network operators and the supply chain for large-scale installation and the robustness of the data security and privacy arrangements.

1 Comptroller and Auditor General, *Preparations for the roll-out of smart meters*, Session 2010–2012, HC 1091, National Audit Office, June 2011.

2 Department of Energy & Climate Change, *Smart Metering Implementation Programme: Progress update report to the Public Accounts Committee*, March 2014.

3 HC Committee of Public Accounts, *Preparation for the roll-out of Smart Meters*, Sixty-third Report of Session 2010–2012, HC 1617, January 2012.

4 The Department's assessment of the likelihood of these risks is low, but the potential impact in some cases is high. The Department's economic case is based on the assumption that the Programme will achieve near universal roll-out. It has allowed about £1.5 billion for higher than expected costs. The Department is relying both on the suppliers' own commercial incentives to bear down on costs, and on competition between suppliers to ensure efficient roll-out and to keep costs under control. The Department and Ofgem have broad powers to intervene through financial penalties, introduction of further regulation and, in extreme cases, revoking licences. During and following the transition from a Department-led Programme to industry-led governance, the Department must retain its ownership of the Programme's key risks, ensure that roles and accountabilities are clear and make appropriate use of its powers to manage risks, costs and benefits.

Background

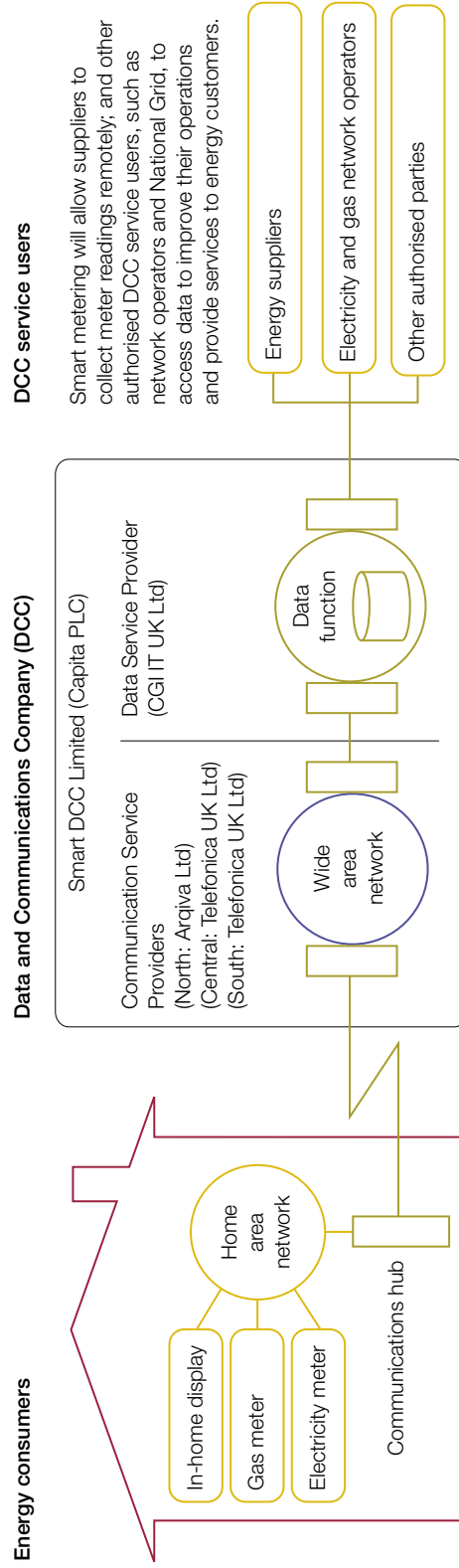
5 The government wants suppliers to install smart meters in all homes and smaller non-domestic buildings in Britain by 2020. Smart meters are intended to give consumers near real-time energy consumption information and allow suppliers to collect meter readings remotely. The Department expects smart meters to help consumers reduce their energy consumption, shift demand away from peak times, and encourage switching between tariffs and suppliers to reduce bills and carbon emissions. It also expects smart meters to reduce costs for suppliers, network operators and generators. **Figure 1** overleaf illustrates the main components of the planned smart metering infrastructure.

6 The Department designed the Programme to be completed in two phases, the foundation stage and the mass roll-out stage:

- During the **foundation stage**, which began in April 2011, the Department has played a central role by establishing the policy, regulatory and commercial frameworks that will underpin and drive the delivery of smart meters. In September 2013, it established the shared data and communications infrastructure, to ensure that meters work consistently for all consumers, regardless of their energy supplier. It established the regulatory framework for the Programme, which requires suppliers to install the meters, to provide funding for the Data and Communications Company (DCC)⁴ and to fund a new Smart Meter Central Delivery Body (CDB) to increase consumer awareness of the Programme, to prepare consumers for installation and to promote long-term energy consumption behaviour change. The Department expected industry participants to use the foundation stage to gain the experience and learning they need for mass roll-out.
- The **mass roll-out stage** is due to start in late 2015. The regulatory framework that the Department has put in place requires energy suppliers, under licence conditions that will be overseen by Ofgem, to take all reasonable steps to install smart meters in all households and small businesses by the end of 2020.

4 Network operators and other users of the Data and Communications Company's services are also required to fund the Data and Communications Company.

Figure 1
The main components of the smart metering system



Note

1 The DCC, a licensed body established by the Department and regulated by Ofgem, is responsible for two-way communications and the transfer of data between smart meters and energy suppliers, network companies and other authorised third parties. The DCC's data services provider is contracted to develop, host and maintain a software application to allow messaging between DCC service users and consumers' premises; and the communications service providers will provide a wide area network and design, procure and own communications hubs, which will be provided to energy suppliers.

Source: National Audit Office

7 The Department expects the transition to the enduring industry-led governance arrangements to take place progressively over the next two years, as the DCC and industry take up their respective roles. The ongoing development of the technical operation of the Programme will be governed by the Smart Energy Code and its Panel. Ofgem will oversee energy suppliers' and other industry participants' compliance with their licence and code obligations. Once the transition is complete, the Department will retain its current responsibilities to monitor programme delivery, costs and benefits through to the end of the roll-out in 2020 and will have an ongoing but reduced role in challenging and overseeing the progress of the Programme. **Figure 2** overleaf shows the governance arrangements following the transition to the industry-led Programme. The Department has committed to publishing annual progress reports on the roll-out of smart metering and benefits to consumers. The first annual progress report was published in December 2012 and the second in December 2013.

Key findings

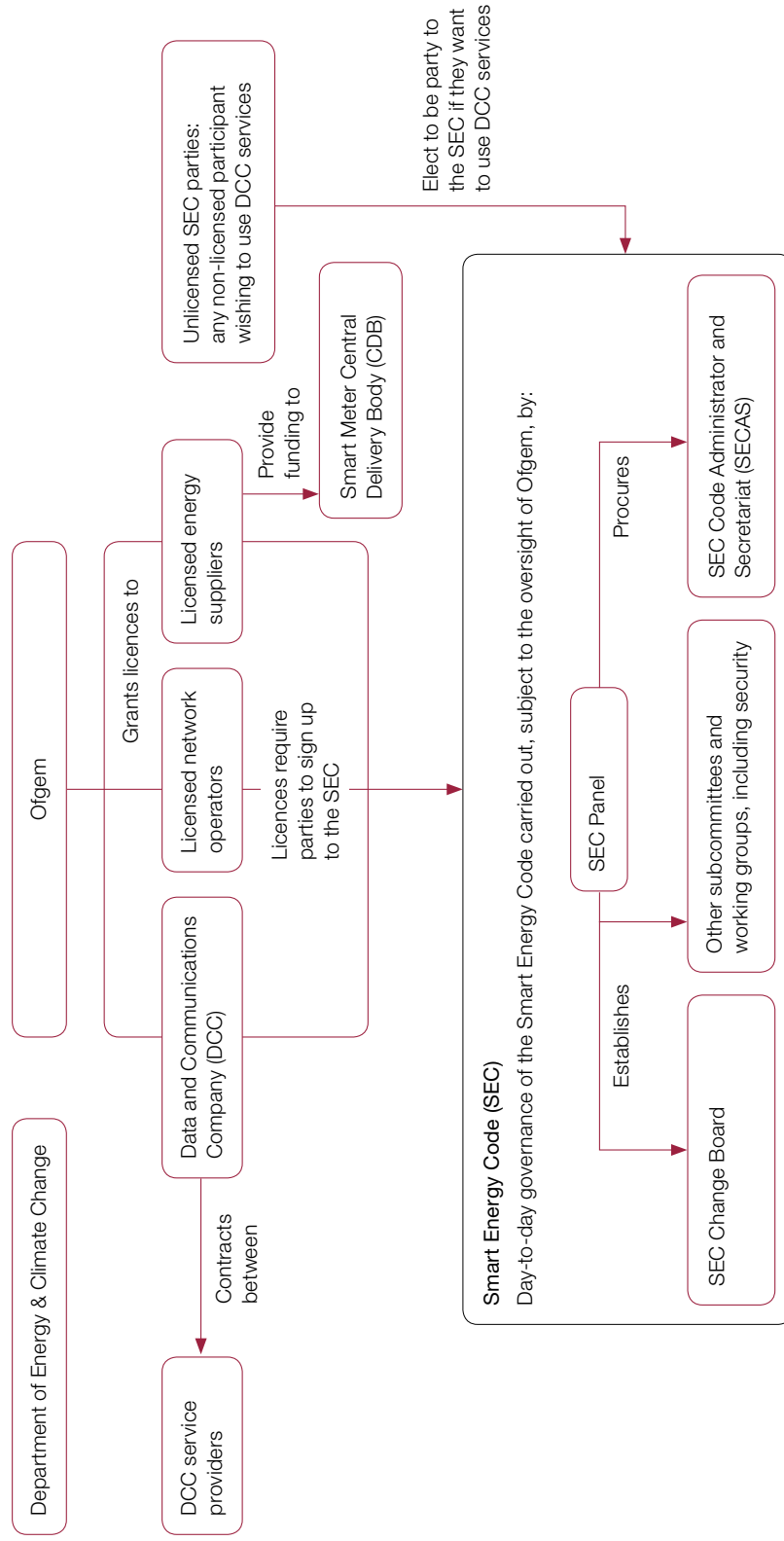
8 The Department has kept the Programme on track for completion by 2020, which, if achieved, will be broadly in line with the timetables of other European countries' smart metering programmes. Many other European countries' plans are for universal smart electricity metering by 2020 or earlier. In 2013, in consultation with industry and other stakeholders, the Department put back the planned start and end dates of mass roll-out by a year, to late 2015 and the end of 2020 respectively, to give the Department and industry more time to prepare. The Major Projects Authority reviewed the decision to reschedule the Programme in July 2013 and found that it was strongly endorsed by all stakeholders. The DCC is now consulting on its recommendation to further delay the start of mass roll-out by 8–10 weeks to allow sufficient time to build and test the smart metering communications systems. This would allow the mass roll-out to start in the fourth quarter of 2015 as intended, and is not expected to delay the completion of mass roll-out (paragraphs 1.1 to 1.3).

9 The Department's economic case for smart meters remains positive. The benefit–cost ratio for the Programme to 2030 has remained at around £1.60 of benefit for every £1 spent. Since we last examined the Programme in 2011, net programme benefits have reduced from £8.3 billion to £6.2 billion.⁵ The primary reason for this is the one-year delay to the completion of mass roll-out. The Department expects the Programme to deliver additional benefits, which it has not quantified, from increased competition through easier switching between suppliers and from the opportunities offered by developing smart grids (paragraphs 2.2 and 2.15 to 2.17).

⁵ For the purposes of this briefing, we have converted the estimated benefits and costs contained in the Department's impact assessments into 2011 prices and a 2013 present value base year (see paragraph 2.16 and Appendix One).

Figure 2
Planned enduring governance arrangements

The Department will monitor programme delivery and Ofgem will oversee the governance of the Smart Energy Code



Notes

- 1 The organisation chart describes the governance arrangements for smart metering following the transfer of programme responsibilities from the Department to industry.
- 2 The SEC Change Board is a subcommittee of the Panel that is responsible for developing and considering proposed changes to the Smart Energy Code.

Source: Department of Energy & Climate Change

10 Estimated benefits are based on the assumption that smart meters are rolled out to virtually all consumers by the end of 2020. Energy suppliers must show that they have taken all reasonable steps to roll out smart meters to all their customers. But they are concerned at the costs of engaging reluctant customers. One supplier told us that, during the foundation stage, the average number of telephone calls they had to make and the proportion of failed appointments were higher than they had anticipated. The Department's tracking survey shows that 40 per cent of households have expressed an interest in having a smart meter installed in their home, which is in line with the Department's expectations at this stage of the Programme (paragraphs 2.19 and 2.20).

11 Stakeholders consider the Department's assessment of consumer energy savings (an average of 2.8 per cent for electricity and 2.0 per cent for gas up to 2030) to be realistic and achievable. Our review of existing evidence from UK and international trials also supports the Department's estimates, but evidence for behaviour change in the longer term is limited, because the technology is new and most trials have not yet been in place very long. The Department estimates that if these savings are achieved, energy bills will reduce by an average of £26 a year for each household by 2020, and by £43 a year in 2030. These figures rely on industry passing on their operational cost savings to consumers, and energy savings being maintained until 2030. The CDB, which will play a key role in promoting behaviour change, is expected to remain in existence until a year after the end of mass roll-out and the Department expects to keep under review its policy on engagement with consumers beyond that date (paragraphs 1.11 to 1.14, 2.8, 2.9 and 2.21 to 2.25).

12 The Department is relying both on the suppliers' own commercial incentives to bear down on costs, and on competition between suppliers to ensure that suppliers achieve universal roll-out efficiently. There is a risk that Programme costs will escalate during mass roll-out, but the Department is confident that suppliers have incentives to control the cost of roll-out both for commercial reasons and to remain competitive. Consumers will be able to switch away from suppliers that do not keep their customer offer and prices competitive and the Department and Ofgem have a range of initiatives to maintain competitive pressures, for example by making switching easier and quicker. Alongside this, in March 2014, Ofgem proposed to refer the retail energy market to the Competition and Markets Authority to investigate if features of the market are having an adverse effect on competition and, if so, what reforms would make competition more effective (paragraphs 2.5, 2.27 and 3.11).

13 The Department described the foundation stage as “a vital opportunity to test and trial both smart metering technology and approaches to consumer engagement”,⁶ but four of the big six suppliers have not yet installed significant numbers of smart meters. The Department told us that all larger suppliers were preparing or undertaking trials of smart metering equipment, building and testing new systems and processes, and recruiting and training installers and customer service staff. The Department is monitoring the likelihood and impact of the risk that not all suppliers will be ready for large-scale installation in line with current plans and is confident that the regulatory regime will ensure all suppliers meet their obligations by 2020. Network operators are also important for the roll-out, but they cannot yet fully plan their work to ensure that they will have the necessary resources in the right place and at the right time. This is because suppliers have not yet provided their roll-out plans in sufficient geographical detail (paragraphs 1.21 to 1.26).

14 Suppliers are still developing a home area network radio system for up to 30 per cent of premises. The home area network that enables consumers to connect in-home displays and other consumer devices to their smart meters currently operates at a frequency of 2.4 GHz and is not suitable for some properties, such as many high rise flats or buildings with thick walls, which limit or prevent the components of the smart metering system from communicating with each other. Suppliers are leading the development of a home area wireless network that operates at a frequency of 868MHz which is expected to work in all but 5 per cent of premises. The Department told us that it expects meters that communicate on the 868MHz frequency to be available within a year of the start of mass roll-out and is consulting on the technological approach to be taken for the remaining 5 per cent of premises (paragraph 1.19).

15 Not all energy suppliers have developed a viable prepayment smart meter solution. The Department told us that two smaller suppliers have a smart meter prepayment offering and one larger supplier has begun trialling smart prepayment services with its customers. The Department is confident that all major suppliers will be able to offer smart meter prepayment services by the end of 2015 and, in April 2014, the Secretary of State for Energy & Climate Change challenged suppliers to ensure that, by the end of 2016, current prepayment meters are only replaced with smart meters and that all prepayment customers are offered smart meters. Suppliers are considering their response to this challenge (paragraph 1.20).

16 The Department has considered how smart metering will affect different sectors of society, for example fuel poor consumers, but it has not been able to quantify these impacts. The Department’s impact assessment included evidence of the potential distributional impacts of smart metering from trials carried out in Great Britain and elsewhere that indicate that households living in areas with a high propensity for fuel poverty may benefit at least as much as other households. But the Department has not quantified the impact of smart meters on the bills of different household types and income groups because the evidence is not robust enough (paragraph 2.10).

⁶ Department of Energy & Climate Change, Smart Metering Implementation Programme: *Progress update report to the Public Accounts Committee*, March 2014.

17 The Department has worked closely with security experts in industry and relevant government agencies, including the Communications Electronics Security Group, the government's national technical authority for information assurance, to understand the information security risks the smart metering systems are likely to face and possible control measures. The Department has sought to assess the outcomes of these risk assessments through a series of published specifications, such as the smart metering equipment technical specification (SMETS) and by obligations within the Smart Energy Code and the DCC licence. However, the extent of the ongoing security challenges should not be underestimated. Security threats could evolve rapidly so the end-to-end information security testing will need to be maintained once in place and re-assured regularly. The Department told us that it and Ofgem are making arrangements for ongoing monitoring and control of such threats and risks (paragraphs 1.7 to 1.10 and 3.8).

18 The Department has provided strong Programme leadership, and many of the stakeholders we spoke to volunteered positive views about how the Department is implementing the Programme. It is now ensuring that other parties, such as the DCC and industry, deliver on their responsibilities to ensure a successful roll-out. The realisation of any of the major remaining risks could significantly undermine delivery of the Programme, reduce benefits or add to costs. Clarity of roles and accountabilities is paramount for the consumer confidence needed to ensure efficient delivery. The Department instigated an internal review of governance arrangements in April 2014 to examine, among other things, whether the arrangements provide sufficient leadership, and was due to report its findings to the Department by the end of May 2014 (paragraphs 3.6 and 3.7, and 3.10 to 3.12).

Part One

Progress against plans

1.1 The government finished designing its approach to implementation of smart metering in March 2011 when it published its response to the smart meter prospectus consultation.⁷ The government chose a supplier-led delivery model supported by centrally provided communications and data services. The Department of Energy & Climate Change (the Department) is delivering the Smart Metering Implementation Programme (the Programme) in two phases. The foundation stage began in April 2011 and the mass roll-out stage is due to start in late 2015. The foundation stage's objective is to ensure readiness for mass roll-out. This includes preparing industry and laying the necessary regulatory, technical, commercial and governance groundwork before roll-out. This part of the briefing considers the Department's progress against its plans since March 2011.

1.2 The Department has made progress against key milestones but has not succeeded in finalising the technical readiness for the Programme to its intended schedule (**Figure 3**). After reviewing its progress and consulting industry and other stakeholders, the Department decided in 2013 to amend the Programme timetable and delayed the start and end dates of mass roll-out by a year to give itself and industry more time to plan and prepare. As a result, many of the interim milestones were rescheduled. The Major Projects Authority reviewed the decision to reschedule the Programme in July 2013 and found that it was strongly endorsed by all stakeholders.

1.3 If the Department achieves its aim of completing mass roll-out by the end of 2020, the Great Britain Programme will be broadly in line with other European countries' programmes. For example, Ireland aims to complete universal roll-out of electricity and gas meters by 2019. Denmark, France and the Netherlands all aim to complete roll-out by 2020. Germany has not announced plans for mass roll-out and smart meters are only installed on a voluntary basis.

⁷ Department of Energy & Climate Change and Ofgem, *Smart Metering Implementation Programme, Response to Prospectus Consultation*, 30 March 2011.

Figure 3

Smart metering: progress against key milestones

The most significant changes to the Department's milestones resulted from its decision in 2013 to delay the start and end of mass roll-out by a year

Milestone	Target date	Outturn/planned date
Foundation stage commences	–	Apr 2011
Installation Code of Practice comes into effect	Apr–Jun 2012	Jun 2013
Establishing the Smart Meter Central Delivery Body (CDB)	Jan–Mar 2013	Jun 2013
Appointing the Data and Communications Company (DCC) licensee	Oct–Dec 2012	Sep 2013
Appointing the data and communications service providers	Jan–Mar 2013	Sep 2013
Designating the Smart Energy Code (SEC) Stage 1	Apr–Jun 2013	Sep 2013
Finalising of Smart Metering Equipment Technical Specifications (including GB Companion Specification)	Sep–Dec 2013	Jul 2014
Designating the Smart Energy Code (SEC) Stages 2 and 3	Jul–Sep 2014	To be confirmed
DCC infrastructure in place to enable mass roll-out	Apr–Jun 2014	Sep–Dec 2015
Mandated completion	Sep–Dec 2019	Sep–Dec 2020

Source: National Audit Office

Protecting and engaging with consumers

1.4 The success of the Programme depends on building consumer confidence and engaging with consumers to realise the benefits of smart meters. The Department and Ofgem have put in place regulatory requirements to protect consumers and the Department has set up an independent body, the Smart Meters Central Delivery Body (the CDB), funded by industry to raise public awareness of smart metering and help to prepare consumers for installation.

The Smart Meter Installation Code of Practice

1.5 During 2012, the Department modified the licence conditions of electricity and gas suppliers obliging them to enter into a Smart Meter Installation Code of Practice which provides protection to consumers during installation. The Code came into force in June 2013 rather than in 2012, to reflect the change to the roll-out timetable. It is designed to prevent unwelcome sales activities at the point of installation and to prevent upfront or one-off charging for smart metering equipment. It requires suppliers to explain to customers how they can use smart metering equipment to improve energy efficiency and requires them to identify and meet the needs of vulnerable domestic customers. Customer satisfaction, complaints and redress in respect of smart meters are governed by existing industry arrangements.

1.6 To protect vulnerable customers further, Ofgem introduced new licence conditions in September 2011 for suppliers as part of its consumer protections package. This helps to ensure, among other things, that remote disconnection is only used where it is appropriate to do so.

Data privacy and security assurance

1.7 The Comptroller and Auditor General reported concerns in his 2011 report about possible security risks, in particular accidental release or theft of data as well as cyber-attacks.⁸ To mitigate these risks, the Department has consulted and worked together with industry and others to help ensure that consumers control access to their energy consumption data and smart metering equipment and communications systems are secure.

1.8 The Department consulted on a framework for smart metering data access and privacy in 2012. In response to that consultation, the Department made changes to energy suppliers' and the DCC's licence conditions. The conditions govern how different parties can access energy consumption data and give domestic consumers control over how their energy consumption data are used (except where this is required for billing or for other regulated purposes). For example, suppliers can only use energy consumption data for marketing purposes where the consumer explicitly consents to this. The conditions came into force in June 2013 and compliance is overseen by Ofgem.

⁸ Comptroller and Auditor General, *Preparations for the roll-out of smart meters*, Session 2010–2012, HC 1091, National Audit Office, June 2011.

1.9 To help ensure the security of smart metering equipment and communication systems, the Department has worked closely with security experts in industry and relevant government agencies, including the Communications Electronics Security Group, the government's national technical authority for information assurance, to understand the information security risks the smart metering systems are likely to face and possible control measures. The Department has sought to address the outcomes of these risk assessments through a series of published specifications, such as the smart metering equipment technical specifications (SMETS) and by obligations within the Smart Energy Code and the DCC licence. The specifications require that the security measures conform to international standards and common industry good practice, and are subject to independent assurance. The Department has also put in place requirements for the DCC to test its systems and to undergo an independent security assurance assessment before mass roll-out. This includes testing its systems with suppliers and other users. DCC users will also be subject to independent assurance arrangements to demonstrate compliance with security obligations before they can use DCC services.

1.10 Although the technical specifications are not yet finalised, the stakeholders we spoke to did not view data security as a major risk that would halt or delay mass roll-out. However, the extent of the ongoing security challenges leading up to and after the start of mass roll-out should not be underestimated. Potential threats could evolve rapidly. The end-to-end view of information security risks and associated risk appetite will need to be maintained and re-assured regularly once in place. The Department told us that it and Ofgem are making arrangements for ongoing monitoring and control of such threats and risks, which will be important in maintaining public trust.

Consumer engagement and the new CDB

1.11 The Department published its smart metering consumer engagement strategy in December 2012.⁹ The strategy gave suppliers primary responsibility for consumer engagement but concluded that the CDB should be established “to deliver a centralised programme of domestic consumer engagement activities” during the roll-out. The Department introduced new supplier licence conditions in 2013 that require suppliers to fund the CDB. Suppliers established the CDB in June 2013 and it published its first consumer engagement plan in December 2013.¹⁰

⁹ Department of Energy & Climate Change, *Government response to the Smart Metering Implementation Programme consultation on the Consumer Engagement Strategy*, 21 December 2012.

¹⁰ Smart Meter Central Delivery Body, *Engagement Plan for Smart Meter Roll-out*, December 2013.

1.12 The CDB has described its aim as being “that the interests of consumers are central to the planning and delivery of roll-out, and that energy suppliers, power networks and government ensure that all the potential benefits that smart meters can deliver to consumers are delivered, and delivered in full to consumers.” Its key objectives for 2014 include:

- developing detailed and targeted marketing plans;
- taking over responsibility from the Department for commissioning and publishing consumer attitudes and awareness tracking research and a programme of qualitative research to inform the nature of the campaign;
- sourcing a creative agency to develop a campaign identity and brand; and
- working with stakeholder groups.

1.13 Suppliers and consumer groups recognise the importance of the CDB’s role in raising public awareness and securing consumer support for smart meters, particularly when trust in energy suppliers is low, and consider it has made a good start.

1.14 The Department has tracked consumer awareness through a six-monthly tracking survey, responsibility for which has now been assumed by the CDB. The research shows that consumer awareness has been rising steadily and reached 60 per cent by February 2014. The proportion of households expressing an interest in having a smart meter installed has remained around 40 per cent since April 2012, when monitoring began.¹¹ The Department told us this is in line with its expectations at this stage of the Programme. Leading up to roll-out, this tracking data will provide a key indicator of the CDB’s success in raising consumer awareness and encouraging acceptance of smart metering.

Ensuring the technology is fit for purpose

1.15 The Department has taken a lead role, working with industry, in specifying the technical standards for smart metering. The technical standards help to ensure that smart metering equipment is fit for purpose and can support interoperability between suppliers.

1.16 Much of the technical specification work for roll-out has been completed. However, there has been a delay to finishing the Great Britain Companion Specification, which will describe the detailed requirements for communications between devices in people’s homes and between devices and the DCC. It was due to have been finalised by December 2013, but a complete version is not now expected until July 2014. Meter manufacturers and others in the supply chain can begin meter and communications design and build activities based on the emerging Companion Specification but they cannot finish these activities until the specification is finalised. The DCC and suppliers may have to redo work from this stage if the specifications change. Critical activities will therefore finish later than planned, and some suppliers told us they may face increased costs because of the delay.

¹¹ Available at: www.gov.uk/government/publications/quantitative-research-into-public-awareness-attitudes-and-experience-of-smart-meters-wave-4

1.17 The DCC launched a consultation to industry in April 2014 on how to respond to the delay to the Companion Specification. It concluded that the risk of maintaining the current mass roll-out start would be too high and would almost certainly lead to unplanned delays with higher costs than those for a realistically scheduled plan. The DCC has recommended starting meter development activities and certain testing activities early and in parallel. It believes that this would reduce the delay to 8–10 weeks but would mean that the mass roll-out could still start in the fourth quarter of 2015, as intended. The DCC estimates that this would increase their costs, which are borne by suppliers, by £23 million and add to the existing risk profile. It intends to review scheduling risks again in December 2014.

1.18 Some uncertainties remain about whether all the proposed communications hubs are suitable. These hubs allow communication between electricity meters, gas meters, the in-home display and DCC services. Arqiva and Telefonica, the communications service providers, are procuring the hubs on behalf of suppliers and they will retain ownership of the hubs. Some suppliers told us that the combined height of the hub and the smart electricity meter is greater than that of some existing meter cabinets. The DCC told us that, in the majority of cases, the current combinations of smart meter and hub will fit and, for those situations where the combined height is a problem, the two devices can be installed side by side.

1.19 Suppliers are still developing a home area network radio system for up to 30 per cent of premises. The home area network enables consumers to connect in-home displays and other consumer devices to their smart meters. The radio system currently operates at a frequency of 2.4 GHz and is not suitable for many high rise flats and buildings with thick walls, which limit or prevent the components of the smart metering system from communicating with each other. Suppliers are leading the development of a wireless network that operates at a frequency of 868MHz which is expected to work in all but 5 per cent of premises. The Department told us that it expects meters which communicate on the 868MHz frequency to be available within a year of the start of mass roll-out. The Department is currently consulting on the approach to the remaining 5 per cent of premises where additional range-extending technology, such as wired solutions, may be needed, and is confident that its proposed regulatory requirements will drive industry to develop the necessary solutions.

1.20 Not all energy suppliers have developed a viable prepayment smart meter solution. The Department told us that two smaller suppliers have a smart meter prepayment offering and one larger supplier has begun trialling smart prepayment services with its customers. The Department is confident that all major suppliers will be able to offer smart meter prepayment services by the end of 2015 and, in April 2014, the Secretary of State for Energy & Climate Change challenged industry to ensure that, by the end of 2016, current prepayment meters are only replaced with smart meters and that all prepayment customers are offered prepayment smart meters.¹² If suppliers meet this challenge, it will help to ensure that low-income households, who are more likely to be prepayment customers, benefit from the Programme during its early years. Suppliers are considering their response to the Secretary of State's challenge.

Industry readiness

Suppliers

1.21 A key aim of the foundation stage is to let energy suppliers test and trial smart metering technology before data and communication services are fully operational so that they can learn lessons from early installations, giving them a solid platform for mass roll-out.

1.22 The Department stated in its progress update report that the foundation stage "is a vital opportunity to test and trial both smart metering technology and approaches to consumer engagement".¹³ However, installation activity has largely been limited to two suppliers. By the end of 2013, a total of 296,000 smart meters that are compliant with the latest technical specifications had been installed in domestic properties.¹⁴ The Department did not oblige suppliers to install specific volumes of smart meters during the foundation stage. Suppliers are undertaking a range of activities and, according to the Department's report, these have informed the prioritisation of early installations and identified some network issues that can be resolved prior to mass roll-out. Suppliers that had not so far installed significant numbers of smart meters told us they faced difficulties in obtaining finance to procure equipment or that they were waiting for technical specifications to be finalised.

¹² Available at: www.libdemocrats.org/ed_davey_a_better_deal_for_people_on_pre_payment_energy_meters

¹³ Department of Energy & Climate Change, *Smart Metering Implementation Programme: Progress update report to the Public Accounts Committee*, March 2014.

¹⁴ Department of Energy & Climate Change, *Statistical Release: Experimental National Statistics – Smart Meters, Great Britain, Quarterly report to end December 2013*, March 2014.

1.23 The Department said that the number of meters installed was not the only indicator of supplier activity and that they had seen signs of other activity increasing in recent months as roll-out approaches. The Department told us that all larger suppliers were preparing or undertaking trials of smart metering equipment, building and testing new systems and processes, and recruiting and training installers and customer service staff. It is visiting the big six suppliers every three months, to examine progress on aspects such as IT investment and recruitment and procurement plans. The Department told us that it has seen significant progress in recent months in suppliers' capability, back-office systems and planning. It is monitoring the likelihood and impact of the risk that not all suppliers will be ready for large-scale installation in line with current plans, and is confident that the regulatory regime will ensure all suppliers meet their obligations by 2020. The large suppliers we spoke to were all confident that they would be able to hit the ground running when mass roll-out begins.

Network operators

1.24 Network operators told us they have not yet been able to plan for the resources they need to support mass roll-out. Network operators will not be installing smart metering but, as with the installation of non-smart meters, their involvement will be required when meter installation brings to light faults or damage to network operators' equipment which needs to be rectified. Some of these issues will be classed as emergencies and in these cases network operators will be expected to respond within three hours. Non-emergency issues may also have the potential to delay installation and, in these cases, a response time of 40 days will be expected. Although network operators' costs will increase during the roll-out period because of the increased number of issues that will come to light, the increased costs are not attributable to the Programme as they would have been incurred anyway at some stage.

1.25 There is uncertainty about how often network operators' intervention will be needed. Ofgem currently estimates that network operators' intervention will be needed at 2 per cent of properties that are having a smart meter installed, but a small trial by one energy supplier suggested that the figure could be higher. This could lead to pressure on network operator resources and increased costs for suppliers if installations are delayed. Suppliers are concerned that a backlog of work will build up and network operators are concerned that suppliers may not correctly categorise network issues requiring a faster response by network operators.

1.26 Network operators are finding it difficult to plan where and when they will need resources. Although they have seen suppliers' roll-out plans, which give anticipated numbers of installations by network area for each year of the five-year roll-out period, they have not yet been given the postcode area breakdowns they say they need to plan their workloads effectively. Network operators and suppliers are currently negotiating to reach a service level agreement that sets out the levels of service for network operator interventions and also details the data that suppliers will provide about their roll-out plans.

Meter manufacturers

1.27 Despite delays in finalising the Great Britain Companion Specification, the British Electrotechnical and Allied Manufacturers Association (which represents meter manufacturers) is confident that the supply chain is ready for mass manufacture of meters, in-home displays and the communications hubs; and that enough meter manufacturers will be able to act quickly once key technical specifications are finalised. However, the Association is concerned that some energy suppliers have been slow in placing smart meter orders both for foundation stage meters and advance orders for meters that meet the final technical specifications. Meter manufacturers are therefore reluctant to put the necessary production infrastructure in place for manufacture at scale before suppliers place a greater volume of orders. Delays in finalising smart metering technical specifications have not, however, prevented British Gas from agreeing a £600 million deal with a meter manufacturer in September 2013 to supply a significant proportion of its customer base.

Part Two

The economic case

2.1 The Department of Energy & Climate Change's (the Department's) latest estimate is that smart metering will produce net economic benefits of £6.2 billion.¹⁵ This part of the briefing considers:

- the Department's latest assessment of expected benefits and costs;
- how the Department has dealt with risk and uncertainty;
- what quality assurance the Department has applied to its modelling;
- changes to estimates since 2011; and
- the sources and strength of evidence behind the economic case.

Latest benefit–cost estimate

2.2 The Department updated its impact assessment for smart meters in January 2014. The Department estimates that installing smart electricity and gas meters will bring benefits of £17.1 billion and cost £10.9 billion between 2013 and 2030. This gives an estimated net present value of £6.2 billion and a benefit–cost ratio of £1.60 for every £1 spent (**Figure 4** overleaf).

Benefits

2.3 The largest sources of benefits are:

- energy supplier benefits of £8.3 billion (48 per cent of estimated benefits), mainly through operational cost savings such as avoided site visits (£3.0 billion) and reducing the cost to suppliers of managing the switching process (£1.6 billion);
- consumer benefits amounting to £5.7 billion (33 per cent), mainly through reduced demand from giving consumers and businesses better information on energy use and bills;
- UK-wide benefits arising from reduced energy use – principally carbon dioxide emission reductions and improved air quality – valued at £1.3 billion (8 per cent); and
- network benefits of £1.0 billion and generation benefits of £0.9 billion.

¹⁵ These estimated net benefits are given in 2011 prices and a 2013 present value base year to enable comparison, and are not directly comparable to the Department's 2011 impact assessment which used 2009 prices and a 2011 present value base year to estimate benefits and costs.

Figure 4

The Department's benefit–cost analysis for smart metering (2011 prices and 2013 present value base year)¹

Smart metering has a net benefit of £6.2 billion and benefit–cost ratio of 1.6:1

	Domestic premises (£bn)	Non-domestic premises (£bn)	Total (£bn)
Benefits²			
Consumer	4.3	1.4	5.7
Supplier	8.0	0.3	8.3
Network	0.9	0.1	1.0
Generation ³	0.8	-	0.9
UK-wide	0.9	0.4	1.3
Total benefits	14.8	2.3	17.1
Costs	10.5	0.5	10.9
Net present value	4.3	1.9	6.2
Benefit–cost ratio	1.4	5.1	1.6

Notes

- 1 Figures do not add due to rounding.
- 2 Benefits are the additional benefits forecast from rolling out smart meters. They have been assessed against a scenario of doing nothing.
- 3 The figure for non-domestic premises is less than £0.05 billion.

Source: National Audit Office analysis of Department of Energy & Climate Change's January 2014 impact assessment estimates

2.4 The Department's estimates of benefits are based on evidence from international trials and results from trials of smart metering in Great Britain that show the impact of energy usage feedback on consumption.

2.5 The Department and Ofgem are undertaking a range of initiatives to make switching easier and quicker and expects smart meters to further encourage switching. The Department has not estimated the potential benefits from stronger competition between energy suppliers resulting from easier switching. The Department has also not estimated the benefits from enabling a smart electricity grid.¹⁶ The Department told us that it would be difficult to quantify these benefits with confidence at this stage.

¹⁶ Department of Energy & Climate Change, *Impact assessment, Smart meter roll-out for the domestic and small and medium non-domestic sectors (GB)*, January 2014.

Costs

2.6 The Department's cost estimates for smart metering total £10.9 billion between 2013 and 2030. The largest sources of costs are:

- the capital and operation and maintenance costs of smart meters and in-home displays (£4.6 billion);
- installing the meters (£1.8 billion);
- DCC communications services (£1.4 billion);
- communications hubs (£1.0 billion); and
- development of suppliers' and other industry participants' systems (£0.8 billion).

2.7 The cost estimate includes financing costs and allows around £1.5 billion for optimism bias. It is based on information from energy suppliers, meter manufacturers and network companies, supported by evidence on the cost of rolling out smart meters in other countries.

Energy bill impacts

2.8 The Department's analysis of the impacts on energy bills assumes that the costs to energy suppliers of rolling out smart meters will be recovered through higher energy bills. These costs will be offset by reduced energy consumption and the expectation that competition will lead to energy suppliers passing cost savings to consumers.

2.9 The Department estimates that smart meter roll-out will result in a short-term transitional energy bill increase that is expected to peak in 2015 at an average of around £6 a year for each household. By 2020, once roll-out is complete, the Department expects that savings on energy bills will average £26 a year for each household, and by £43 a year in 2030.¹⁷

Impacts on vulnerable and low-income consumers

2.10 HM Treasury *Green Book* guidance recommends that departments should consider the distributional impacts of a policy intervention on different sectors of society.¹⁸ The Department's impact assessment referred to limited evidence of the potential distributional impacts of smart metering, from trials carried out in Great Britain and elsewhere which indicates that households living in areas with a high propensity for fuel poverty may benefit at least as much as other households. The Department told us it considered that the available evidence was not sufficiently strong to support robust quantification of the impacts of smart metering on bills for different household types and income groups.

¹⁷ Department of Energy & Climate Change, *Impact assessment, Smart meter roll-out for the domestic and small and medium non-domestic sectors (GB)*, pages 67–69, January 2014.

¹⁸ HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, July 2011.

Risk and uncertainty

2.11 The economic benefits of smart metering are subject to a wide range of uncertainty. The Department applied an extreme range approach to consider the potential impact of low- and high-sensitivity cases for energy savings and other benefits such as avoided site visits. The Department estimates that the potential net benefits of installing smart electricity and gas meters alongside in-home displays lie in the range £1.3 billion to £11.4 billion. This reflects assumptions that include the level of energy savings ranging from 1 per cent to 4 per cent (**Figure 5**). The Department has assumed that smart meters will be installed in virtually all premises by the end of 2020.

2.12 The Department's cost estimates include adjustments for optimism bias of between 10 and 20 per cent for individual components, reflecting its assessment of project specific costs and risks. In line with HM Treasury *Green Book* guidance, the Department has reviewed and revised these risk allowances, as new and better information has become available. For example, after awarding the licence to the DCC and contracts for providing data and communications services in September 2013, the Department reduced the total provision for optimism bias by around £300 million. The remaining optimism bias provision is approximately £1.5 billion and relates to costs for installation, metering equipment, IT costs and the additional costs that may be incurred when roll-out installation rates peak at their highest levels.

Figure 5

The Department's sensitivity testing of the benefit–cost analysis for smart metering (2011 prices and 2013 present value base year)

The Department estimates the potential net benefits of smart metering range from £1.3 billion to £11.4 billion

Total costs (£bn)	Total benefits (£bn)			Net present value (£bn)		
	Low	Central	High	Low	Central	High
10.9	12.2	17.1	22.3	1.3	6.2	11.4

Source: National Audit Office analysis of Department of Energy & Climate Change January 2014 impact assessment estimates

Quality assurance

2.13 Our reports on the InterCity West Coast franchise competition and High Speed 2 highlighted the importance of applying quality assurance to the robustness of the analysis used to inform major investment decisions.¹⁹ We warned of the consequences of not performing that assurance to a sufficiently high standard. The Department has undertaken its own quality assurance of its assessment processes and employed external experts to carry out a detailed external audit between January and March 2013 of the smart metering benefit–cost analysis. The external experts identified some areas for improvement to the analysis, and the Department has incorporated these into its latest impact assessment, increasing the net present value overall by around £170 million. The most significant changes were the introduction of new energy consumption assumptions to correct an error that increased net benefits by around £150 million; and the inclusion of an optimism bias uplift to the costs of smart metering equipment operation and maintenance which reduced net benefits by around £100 million.

2.14 The Regulatory Policy Committee, an advisory non-departmental public body that gives government external, independent scrutiny of the quality of analysis and evidence presented in impact assessments, provided further assurance. The Committee published its opinion on the Department’s smart metering impact assessment in February 2014, rating the impact assessment as green and fit for purpose.²⁰

Changes to benefit–cost estimates since 2011

2.15 The Department has followed recommended HM Treasury practice in reworking its benefit–cost estimates at key stages of the Programme. These have reflected changes to the Programme, new information coming from trials and experience on the ground, growing certainty about costs, and methodological changes, including the use of different price bases.

2.16 Since we examined preparations for rolling out smart meters in 2011, the Department’s estimates of both benefits and costs have reduced. To compare the latest impact assessments we have rebased the results of the Department’s earlier impact assessment figures into 2011 prices and a 2013 present value base year. The comparable figures show that the Department’s estimate of net programme benefits has fallen, from £8.3 billion to £6.2 billion, but the overall benefit–cost ratio remains the same at £1.60 of benefit for every £1 spent (**Figure 6** overleaf). (The Department’s published figures and the rebased figures are shown in Appendix One.)

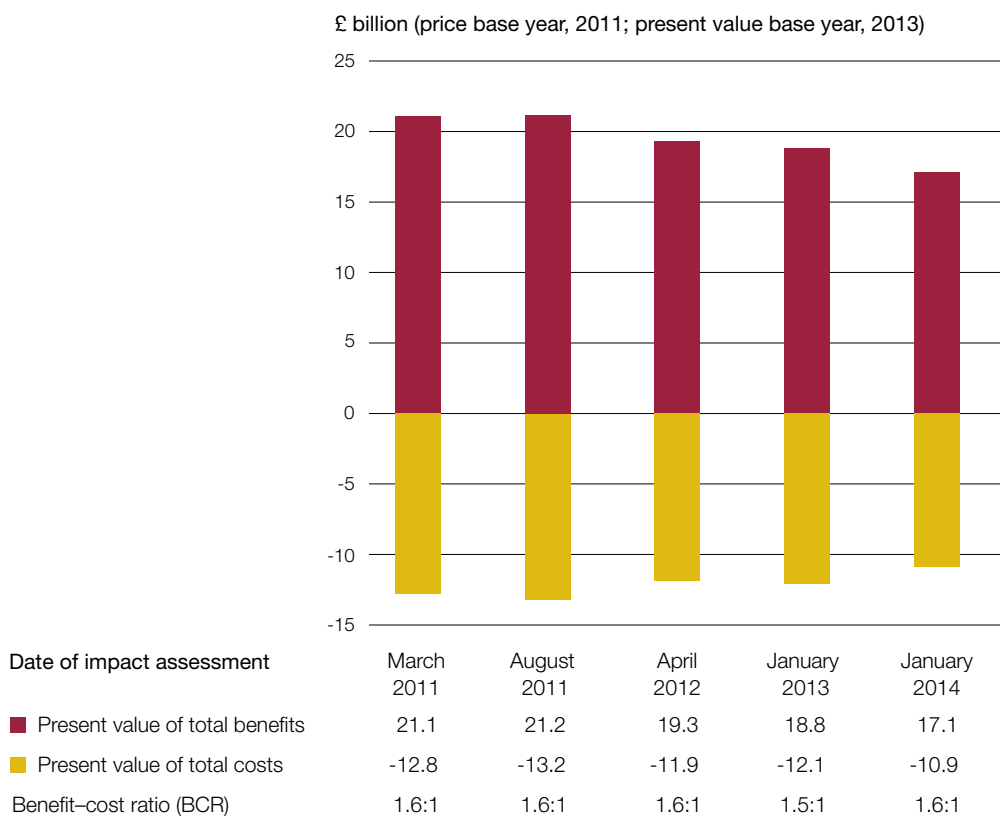
¹⁹ Comptroller and Auditor General, *Lessons from cancelling the InterCity West Coast franchise competition*, Session 2012-13, HC 796, National Audit Office, December 2012; and Comptroller and Auditor General, *High Speed 2: A review of early programme preparation*, Session 2013-14, HC 124, National Audit Office, May 2013.

²⁰ Regulatory Policy Committee, *Impact assessment opinion: Smart meter roll-out for the domestic and small and medium non-domestic sectors*, February 2014.

Figure 6

Economic appraisals for smart metering, March 2011 to January 2014
(2011 prices and 2013 present value base year)

Between March 2011 and January 2014, the benefit–cost ratio for the Programme remained stable at 1.6:1



Source: National Audit Office analysis

2.17 The changes in estimated benefits and costs are shown in **Figure 7** and **Figure 8** on pages 28 and 29. The key drivers behind the changes between 2011 and 2014 are:

- The deferral of the roll-out timetable, which resulted in both estimated capital costs and potential benefits occurring later. As a consequence, the discounting applied to future costs and benefits will have a greater impact and reduce net programme benefits.²¹
- New information about energy suppliers' roll-out profiles indicating that smart meter installations will be more concentrated in the final years of mass roll-out.
- Developments in the evidence base such as incorporating the latest energy demand projections into the analysis.
- New and better evidence about benefits and costs. For example, the 2014 economic case incorporated pricing information contained in the bids for data and communications service costs following the award of the licence and contracts in September 2013. This resulted in a reduction of around £600 million compared to previous cost estimates and, to reflect the greater certainty around these costs, the Department also reduced allowances for optimism bias.

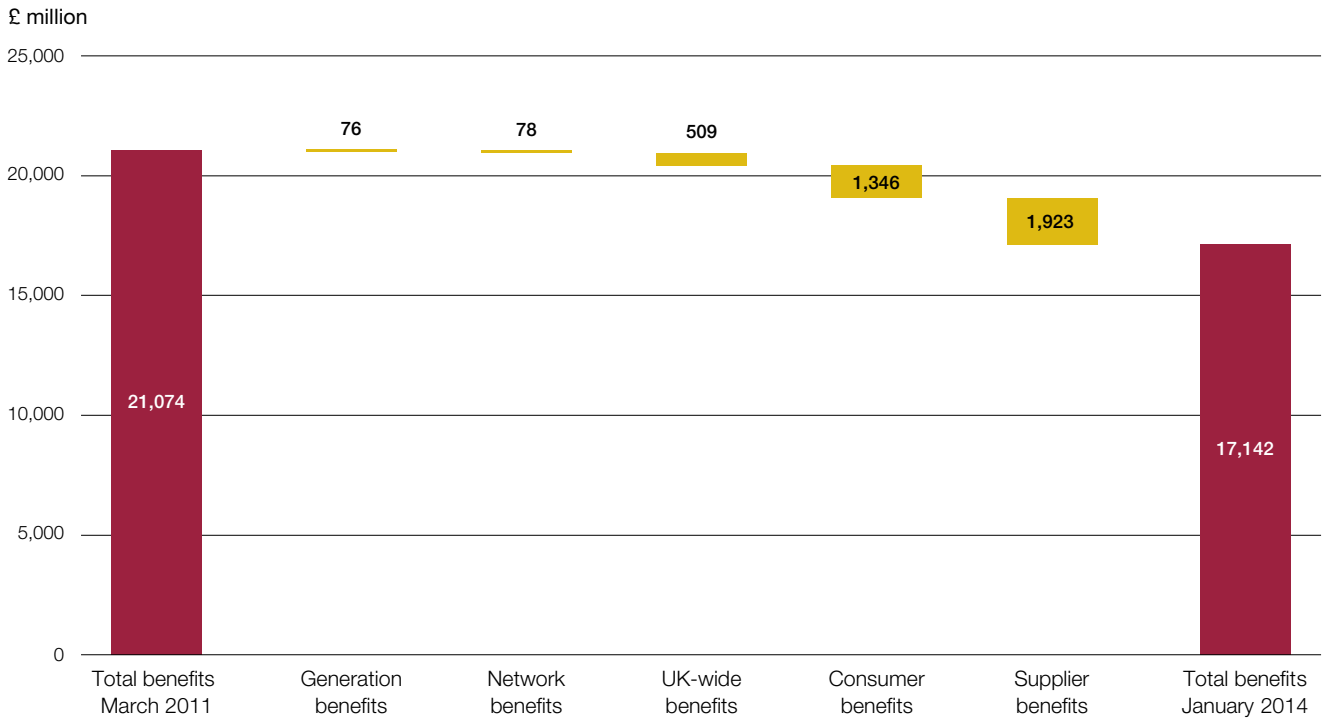
2.18 The Department has assessed Programme benefits up to 2030. This has remained consistent throughout the various revisions of the economic case, despite the deferral of mass roll-out to 2015–2020. As a result of the deferral, the period over which benefits will accrue from the Programme has decreased by a year. This means that one year's worth of benefits and costs are lost in the 2014 analysis. If these impacts had been captured by extending the appraisal end date to 2031, we estimate that net programme benefits would increase by between £0.6 billion and £0.7 billion to almost £7 billion.

²¹ Discounting is a technique used to compare costs and benefits that occur in different time periods. The discount rate used in public sector projects – or the 'test discount rate' as it is often referred to – is stipulated by HM Treasury. It is currently set at 3.5 per cent in real terms.

Figure 7

Changes in the estimated benefits of smart meters, March 2011 to January 2014
(2011 prices and 2013 present value base year)

Between March 2011 and January 2014, expected benefits fell from £21.1 billion to £17.1 billion

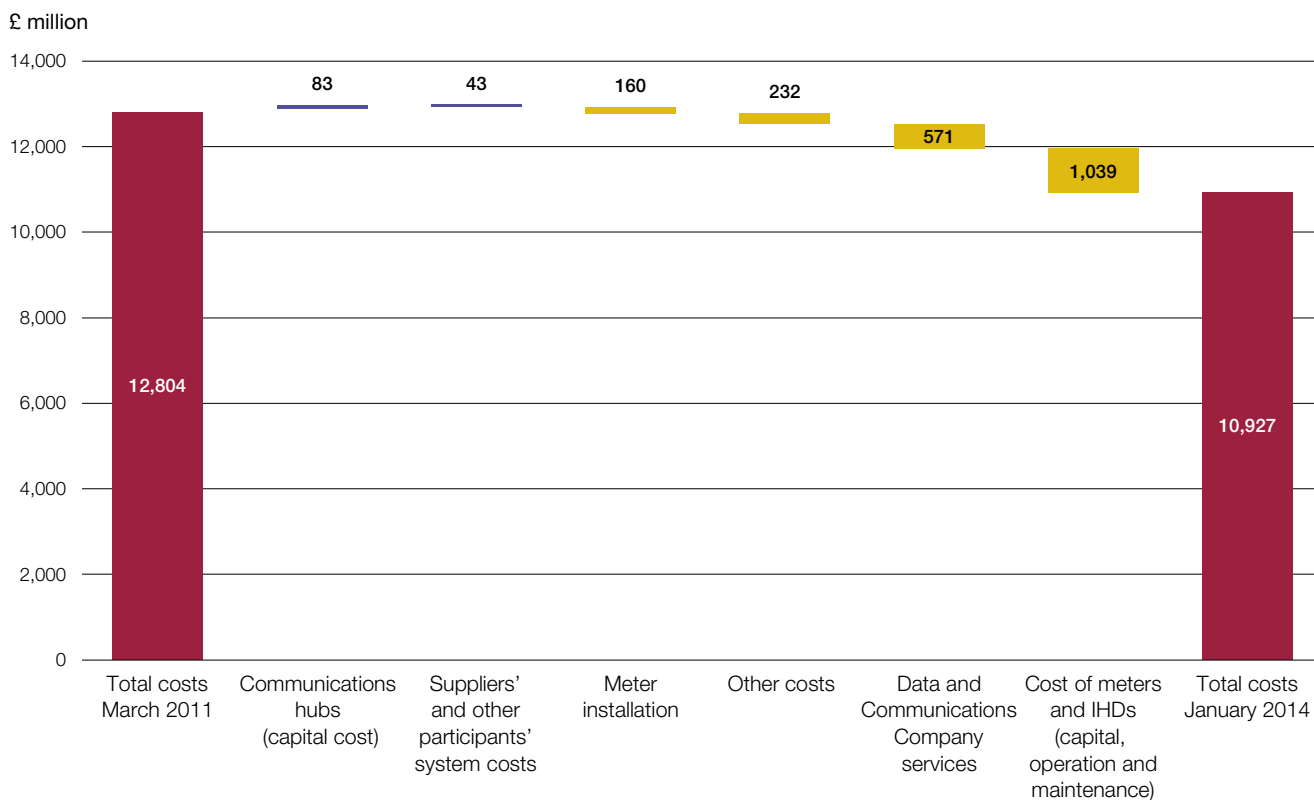


Source: National Audit Office analysis

Figure 8

Changes in the estimated costs of smart meters, March 2011 to January 2014
(2011 prices and 2013 present value base year)

Between March 2011 and January 2014, estimated programme costs fell from £12.8 billion to £10.9 billion – of which, £1 billion was the cost (mainly capital cost) of meters and providing in-home displays (IHDs)



- Increase in estimated costs
- Reduction in estimated costs

Source: National Audit Office analysis

Evidence behind the economic case

Roll-out assumptions

2.19 The Department assumes that smart meters will be rolled out to virtually all energy consumers by the end of 2020. Energy suppliers that we consulted said that they are planning on the basis of being required under their licence conditions to take all reasonable steps to install smart meters in the premises of all their customers by the completion of mass roll-out at the end of 2020. Suppliers, however, consider that 100 per cent roll-out will be challenging and may not be feasible. One supplier suggested that it believes that up to 20 per cent of customers will refuse to have smart meters installed in their homes and two suppliers were concerned about the extra costs involved in rolling out meters to more reluctant customers. One of these told us that, during the foundation stage, it had to make an average of seven telephone calls for each successfully completed smart meter installation appointment, with 18 per cent of appointments either not honoured or cancelled, although the same may be the case for installation of traditional meters. Levels of rejection or reluctance during roll-out are likely to depend on the success of the suppliers' and CDB's consumer engagement work, the quality of installation work and the nature of any media coverage.

Energy saving assumptions

2.20 The Department based its estimates of potential benefits on average reductions in energy consumption of 2.8 per cent for electricity and 2.0 per cent for gas consistently until 2030. The Department considers that it has taken a conservative approach to estimating benefits, adopting lower-end energy savings estimates from the range of potential consumer behaviour responses.

2.21 We reported in 2011 that the Department's assumptions about energy demand reductions drew on the findings of a 2008 review of trials and experiences overseas, and evidence from Department funded trials of smart metering in Great Britain.²² Those trials that generated statistically reliable results identified reductions in demand of between 2 and 4 per cent per household. The evidence on longer-term behaviour change, on which the economic case is built, was more limited.

²² Comptroller and Auditor General, *Preparations for the roll-out of smart meters*, Session 2010–2012, HC 1091, National Audit Office, June 2011.

2.22 Since our 2011 report, more evidence has become available from UK and international trials. The results show that smart meters, in combination with real-time feedback through in-home display devices, can help to reduce energy consumption but there is continued uncertainty about the precise level of consumers' response to the full roll-out of smart meters which will depend on a range of factors. For example, the European Smart Metering Industry Group (ESMIG) published a report in 2011 that reviewed the results of trials in Europe covering 450,000 consumers which suggested possible electricity savings of around 5–6 per cent from interventions without in-home displays to an average of 9 per cent with an in-home display.²³ However, from the evidence available, the potential for energy savings depends on other factors, including:

- how far energy efficiency advice is tailored to a household's needs (for example, detailed information on how households are using energy at different times of the day or year);
- the effectiveness of energy suppliers' consumer engagement approaches; and
- the use of dynamic pricing, such as time-of-use energy tariffs.

2.23 The evidence for long-term behaviour change remains inconclusive. Research results suggest that savings are maintained over the length of the trials (12–36 months). However, given the differences in circumstances (such as climate and cultural differences) and approach between different countries, it is difficult to draw direct conclusions about Great Britain from this evidence.

2.24 Almost all of the energy industry stakeholders we consulted considered that the energy consumption reductions per household assumed in the Department's January 2014 impact assessment are realistic and achievable. Also, those energy suppliers that we spoke to that had installed smart metering equipment during the foundation stage confirmed that smart meters had led to reductions in energy consumption that were broadly similar to the Department's assumptions.

Industry operational cost-saving projections

2.25 The Department has tried to validate its estimates of energy industry operational cost savings and their achievability through discussions with energy industry participants in workshops and bilateral meetings, and consultations during the foundation stage. The potential savings identified in the impact assessment for smart metering are based on averages across the industry. Some of the energy suppliers we spoke to said that the operational cost savings estimated in the impact assessment would vary from supplier to supplier depending on each supplier's starting position in terms of the efficiency of its existing operations and the size of its market share.

²³ European Smart Metering Industry Group, *The potential of smart meter enabled programs to increase energy and systems efficiency*, October 2011.

2.26 The Department estimates that network operator benefits will amount to £1 billion. In 2012, the Energy Networks Association published its analysis showing network operator benefits of over £1 billion, but then updated its analysis in 2013 and revised its estimate to £500 million.²⁴ We have not assessed the robustness of this analysis. The Department told us that it had worked with Ofgem as well as the Energy Networks Association in the development of its estimates of network operator benefits, and was content with the assumptions and information that fed into its impact assessment estimates.

Costs

2.27 Consumer groups expressed their concern to us that roll-out costs are effectively uncapped and that consumers would bear any cost escalation. The key areas of cost uncertainty that the energy industry and consumer group stakeholders explained are below:

- **Cost of installation**

There are uncertainties in the costs suppliers will incur for installation, including the cost of persuading more reluctant customers. The Department's estimates of installation costs are based on numerous assumptions, including installers' hourly rates, the time taken for each installation, travel time between installations and rates of access to properties. If experience is not in line with these assumptions this would substantially affect the costs of installation. Under suppliers' licence conditions for smart metering, they must take 'all reasonable steps' to install meters in householders' properties but the cost of doing so is not known. In line with normal regulatory practice, Ofgem has not specified what 'all reasonable steps' means. Ofgem considers that it is too early to issue guidance in this area as the practical limitations suppliers will face during roll-out are not yet known. However, Ofgem recognises that guidance may be necessary in due course.

- **External costs for suppliers**

Suppliers need to buy in IT consultants and recruit and train installers to fulfil their mass roll-out obligations. As suppliers are likely to be competing against each other for scarce resources, prices and wage rates could escalate. The Department has taken account of these pressures on the supply chain and workforce by applying a price uplift to asset and installation costs where installation rates exceed a certain threshold. The Department's most recent information from suppliers shows more installations occurring in the final years of mass roll-out than previous estimates, for example nearly a quarter of all installations are now expected during 2019.

- **Communications system and services costs**

Suppliers expressed concerns about proposed increases in charges for DCC services. For example, the DCC has indicated that there will be an additional cost of £23 million as a result of the 8–10 week delay to the start of mass roll-out that it is recommending.

²⁴ Energy Networks Association, *Review of Analysis of Network Benefits from Smart Meter Message Flows*, July 2013.

Part Three

Governance and risk management

3.1 This part sets out the current and future governance arrangements for managing the Smart Meters Implementation Programme (the Programme), and examines how the Department of Energy & Climate Change (the Department) manages risk.

Current Programme governance

3.2 The Department has overall responsibility for the Programme and has overseen implementation since April 2011. In consultation with industry, it has led on the development of the technical design specifications, establishing the regulatory framework, monitoring industry progress towards implementation and procuring the Data and Communications Company (the DCC) licensee and the communications and data service providers.

3.3 The Department has risk management procedures to manage the Programme challenges. It maintains a risk register that identifies strategic and workstream risks and issues to help the Programme team to manage, mitigate and provide contingency for risk. All the risks have named owners and target dates for mitigation. The register is maintained by the Department's Programme Management Office.

3.4 The Department collects information from suppliers through quarterly and annual returns. Through the quarterly returns, the Department collects information on the level of installation activity during the foundation stage, and consumer response, for example levels of refusals. Through the annual returns, data are collected on suppliers' forward plans, their trials activity and information on costs and savings (using 2012 data on costs for non-smart meter installation as a baseline). The Department told us it is also visiting the six largest suppliers each quarter, to examine their progress, for instance in IT investment, procurement plans and recruitment.

3.5 The Department has assessed the Programme as high risk due to its overall scale and complexity. As a result, it is subject to periodic review under the Major Projects Authority's gateway assurance procedures. The Authority's predecessor, the Office of Government Commerce, did a 'starting gate review' in September 2009 and the Programme has been subject to further reviews at critical stages. The latest gateway review was in May 2013, at the time of the procurement of the DCC and the data and communications service providers, and assessed both the Programme overall and the Department's transition plans. This review informed the Major Project Authority's judgement in September 2013 that delivery confidence in the Programme was amber because, although good progress had been made, there were still a number of complex areas to tackle. This assessment has been reported in the Authority's second annual report published in May 2014.²⁵

3.6 Many of the stakeholders from industry and from consumer groups we spoke to volunteered positive views about the Department's role in the development and management of the Programme so far. In particular, they praised the Department for its governance framework and the stability of the Programme team, including the Senior Responsible Owner who has been in post since before the start of the foundation stage in April 2011.

3.7 As the Programme moves towards mass roll-out, the Department expects the transition to the enduring industry-led governance arrangements, set out in Figure 2, to take place progressively over the next two years. Suppliers will be responsible for the roll-out and will handle consumer issues arising, including complaints.

Transition to industry-led governance

3.8 The Department started the move towards industry-led governance when it awarded the DCC licence and contracts to its data and communications service providers and established the Smart Energy Code and its Panel in September 2013. The Department managed the competitions for the communications services, but has no contractual relationship with any party in this system, and is not exposed to any commercial risks or liabilities. The Major Projects Authority reviewed these procurements in July 2013. It concluded that the competitions had been well managed and quality assured throughout, and acknowledged a strong culture of commercial leadership and programme control. Ofgem now oversees the DCC's compliance with its licence. The Smart Energy Code Panel will oversee changes to its operation, and a security subcommittee will oversee information security, monitoring the threat landscape and maintenance of end-to-end system security. Ofgem will be responsible for procuring the DCC in the future when its licence expires; the DCC will be responsible for future competitions for data and communications service providers.

25 Major Projects Authority, *Major Projects Authority Annual Report 2013-14*, May 2014.

3.9 The Department expects that the transition to industry-led governance will take place over two years and will be completed by late 2015, as the DCC, industry and the Smart Energy Code Panel take up their respective roles. During transition and mass roll-out, the Department will continue to challenge and oversee progress by all delivery parties. Its key activities will be to scrutinise energy suppliers' and other industry participants' plans and progress against their plans, and to maintain a joint industry plan and risk management processes. The Department and Ofgem have broad powers to intervene through financial penalties, introduction of further regulation and, in extreme cases, revoking licences. The Department expects its programme management costs to reduce gradually as the transition to industry-led governance progresses, from a budget of £19.4 million in 2013-14. In August 2013, the Department projected a budget requirement of £5.9 million a year for the period 2016-17 to 2020-21, but will keep these under review as the Programme evolves.²⁶

Challenges during transition

3.10 The Department has provided strong Programme leadership. However, in handing over the responsibility to industry, roles and accountabilities of the Department, Ofgem, the DCC, suppliers and the Smart Energy Code Panel may become unclear. This risk was highlighted in the 2013 gateway review and by some stakeholders who said they were concerned that the Department might withdraw from its leadership role too quickly as industry takes on delivery responsibility.

3.11 The Department's assessment of the risks set out in this briefing is that the likelihood of them arising is low, but their potential impact is high in some cases and could lead to cost escalation. It is not clear how the Department will retain oversight and ownership of these risks as it moves towards industry-led governance arrangements or who will be responsible for controlling the Programme's costs through to the end of roll-out. Ofgem's recent proposal to make a market investigation reference to the Competition and Markets Authority shows there is doubt over the effectiveness of competition in the industry. Some of the cost risks stem from aspects of the Programme design, such as security and the requirement for universal roll-out, in respect of which the Department cannot rely on competition between suppliers to prevent costs from increasing during roll-out.

3.12 The Department has instigated an internal review of the existing governance arrangements. One aspect of this is to examine whether the arrangements provide sufficient leadership, have the best balance between the Department's enabling and leadership roles, and how this balance should evolve, leading up to roll-out completion in 2020. It will also examine whether the Programme needs additional senior leadership beyond the role played by the existing senior civil servants. The review was due to report its findings to the Department by the end of May 2014.

²⁶ Data provided by the Department.

Appendix One

Impact assessments, March 2011 to January 2014

Figure 9 sets out the high level results of the Department's impact assessments for smart metering published between March 2011 and January 2014. The analyses behind these impact assessments used different price bases and present value base years which prevents direct comparison of the results. For the purposes of our briefing, we converted the estimated benefits and costs contained in these impact assessments into 2011 prices and a 2013 present value base year. (Net present values converted to 2011 prices and a 2013 present value base year are shown in the last row of Figure 9.)

Figure 9

Impact assessments, published March 2011 to January 2014

The Department estimated that smart metering would deliver a net benefit of £7.3 billion in its March 2011 impact assessment (2009 prices and 2011 present value base year)

	Mar 2011 (£bn)	Aug 2011 (£bn)	Apr 2012 (£bn)	Jan 2013 (£bn)	Jan 2014 (£bn)
Present value of total benefits	18.7	18.7	18.6	18.8	17.1
Present value of total costs	-11.3	-11.7	-11.5	-12.1	-10.9
Net present value	7.3	7.1	7.2	6.7	6.2
Price base	2009	2009	2011	2011	2011
Present value base year	2011	2011	2012	2013	2013
Net present value converted to 2011 prices and 2013 present value base year	8.3	8.0	7.4	6.7	6.2

Note

1 Amounts are rounded to the nearest £100 million.

Source: Department of Energy & Climate Change

Appendix Two

Our evidence base

The evidence presented in this briefing is based on our analysis and fieldwork during March and April 2014. It consisted of the following elements.

1 We interviewed energy suppliers and organisations representing other industry participants, such as network operators and meter manufacturers, organisations representing consumer views and third parties involved in the delivery of the Programme including Ofgem, the industry regulator.

We used a structured approach for these interviews to ensure we collected information and views in a consistent format. Organisations were given the option of providing written evidence instead of participating in an interview. The following either participated in an interview or provided a written response.

Suppliers	The regulator
npower (written response)	Ofgem
EDF Energy	Industry bodies
SSE	Energy UK
Scottish Power (written response)	Energy Networks Association
British Gas	British Electrotechnical and Allied Manufacturers Association
E.ON	Consumer organisations
First Utility	Consumer Futures ¹
Good Energy	Fuel Poverty Advisory Group
	Age UK
	Delivery bodies
	Smart Meter Central Delivery Body (CDB)
	Data and Communications Company (DCC)

Note

¹ On 1 April 2014, the functions of Consumer Futures transferred to Citizens Advice, Citizens Advice Scotland and the Consumer Council for Northern Ireland.

2 We interviewed Daron Walker, Director of Smart Meters and Fuel Poverty, the Senior Responsible Owner for the Programme, and key officials at the Department of Energy & Climate Change:

- Head of Policy and Business Architecture
- Programme Director
- Head of Consumer Engagement, Roll-out and Benefits
- Economist
- Programme Security Lead.

3 We reviewed the Department's revised impact assessment published in January 2014 and previous impact assessments since March 2011. We identified changes since we last examined the Programme, and the reasons for those changes, and reviewed the assumptions and evidence behind the Department's benefit–cost estimates.

4 We reviewed other selected departmental documents and third-party evidence to review progress and identify residual risks to the programme, including:

- the Department's March 2014 smart metering update report to the Committee of Public Accounts;
- the Department's first and second annual reports on the roll-out of smart meters;
- the Strategic Outline, Outline and Full Business Cases for smart metering;
- the Programme's risk register;
- consultations and government responses on the Smart Energy Code, the Smart Energy Technical Specifications and the Great Britain Companion Specification; and
- Major Projects Authority reports.

5 We conducted a brief literature review of smart metering trials evidence since 2011.

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