Promoting choice and value
for all gas and electricity customers

Promoting smarter energy markets

Consultation

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Overview:

We are consulting on the scope of a strategy to shape market development from the platform of smart metering. Changes to current market arrangements will be required to enable market development to happen in a way that benefits all consumers and protects their interests during the roll-out and beyond. We consider both the opportunities for innovation in retail energy markets and the potential for improvements to the processes that underpin the operation of the competitive market.

Context

Smart metering will be an important catalyst for change in the energy sector. These changes have the potential to support our key objectives of: contributing to the achievement of a low-carbon energy sector, helping to maintain security of energy supplies and promoting quality and value for all consumers.

As outlined in our Corporate Strategy and Plan 2011-2016, we continue to engage constructively and actively with government in a regulatory capacity to help ensure that the roll-out of smart metering delivers benefits to all consumers. This runs in parallel to our work with government in considering the opportunities and issues associated with the development of a smart grid.

Our Corporate Strategy also recognised the potential wider impact of smart metering. We committed to introducing new consumer protection measures in response to early smart meter deployments and to continue to explore the safeguards that may be necessary in the light of market developments. We also committed to "develop the work programme required to create smarter markets from the platform of smart meters". This consultation is the first step in giving practical effect to this commitment.

Associated documents

All documents are available at www.ofgem.gov.uk:

The Retail Market Review: Domestic Proposals, December 2011, Ref: 166/11

The Retail Market Review – Findings and Initial Proposals, March 2011, Ref: 34/11

Corporate Strategy and Plan 2011-2016, March 2011, Ref: 44/11

Smart Metering Implementation Programme – Response to Prospectus Consultation, March 2011, Ref: 45/11

Smart Metering Spring Package - Addressing Consumer Protection Issues, February 2011, Ref: 13/11

Demand-Side Response - A Discussion Paper, July 2010, Ref: 82/10

Contents

Foreword

We are in a period of significant change in how electricity and gas are supplied to Britain's homes and businesses. While there is a single theme driving this change – the energy sector's role in the transition to a low-carbon economy – this will affect electricity and gas consumers in many different ways. As regulator, Ofgem is considering the future of the energy sector and how best to protect consumers, particularly the vulnerable, by ensuring an affordable, secure and sustainable energy supply.

A specific change that will have a direct impact on all consumers is the government's policy to mandate the roll-out by energy suppliers of smart metering to all domestic and smaller non-domestic consumers by the end of the decade. This is a major delivery programme with the potential to deliver significant benefits. We are committed to engaging constructively with government and stakeholders to help drive good outcomes for consumers.

We recognise the significance of smart metering as a platform for wider change: an opportunity to create "smarter markets" – that are more efficient, dynamic and competitive, and that deliver better value to consumers. Smart metering enables much-needed upgrades to market systems and processes. It also enables new tariffs, products and services that could help consumers save money by using energy more efficiently. These changes are not without risk for consumers – and we will need to make sure that the appropriate protections and support are in place. We are already taking action through our Retail Market Review to ensure that suppliers play it straight with consumers. Building and maintaining strong levels of trust and engagement will be critical in helping ensure that the opportunities created by the roll-out are realised in full.

Ofgem is keen to play its part in helping to identify and, where necessary, implement the changes needed to help realise these significant opportunities for consumers – and to ensure that risks are recognised and managed appropriately. To this end, we are initiating a process to scope and progress work to support the development of smarter markets. This document is the first step in that process, and I welcome your involvement.

Andrew Wright
Senior Partner, Markets

Executive Summary

The roll-out of smart metering over the coming decade represents a key government policy designed to help the transition to a low-carbon economy. The Department of Energy and Climate Change is responsible for delivery of this major change programme, while Ofgem is the independent regulator of the energy markets that play a key role in achieving government policy objectives.

Smart metering can deliver significant benefits for gas and electricity consumers, not least by giving them more control of their energy usage. While much focus at present is on the successful delivery of this major change programme, we need to start thinking now about the implications of the roll-out for the future of energy markets.

The platform of smart metering will provide an opportunity for wider development of retail energy markets. It can help stimulate innovation across the energy supply chain. A major prize could be more efficient use of demand-side response. Innovation in tariff structures (such as time-of-use tariffs), energy services and payment methods can also bring significant benefits for consumers and markets.

Smart metering will also enable the streamlining of the systems and processes that support the operation of the competitive market, helping reduce costs and barriers to entry. There are significant potential benefits from reforming arrangements for settlement, change of supplier and data processing and aggregation services, as well as from consolidating industry codes governing retail market arrangements.

Ofgem's role is to ensure that regulation enables innovation to happen in ways that benefit consumers, while protecting their interests during this process of change and beyond. Our contention is that market development will be constrained by current arrangements, such as their relatively basic approach to measuring consumption.

Positive consumer engagement will be vital to delivering the benefits of smart metering. However, market developments will also present new risks for consumers. Increasing sophistication, for example in tariffs, could impact negatively on participation in the market. Evidence on current levels of disengagement highlights the challenge of helping shape market development such that all consumers can benefit – not just the engaged or active.

To help leverage the benefits enabled by the platform of smart metering, Ofgem plans to develop a strategy for shaping market development. This will provide for a comprehensive, coherent and coordinated approach to the design and delivery of appropriate reforms to market rules, systems and processes. Market participants will have an important role to play in delivering any reforms through changes to industry codes and, in due course, by innovating in the products and services they offer.

Delivery of a strategy will require ongoing engagement with a broad range of stakeholders, including government, industry, consumer groups and potential market entrants. We welcome feedback on the potential reform areas identified, which ones should be priorities for further work, whether we have identified the key issues and whether there are any additional areas that should be within the scope of our work.

1. Introduction

1.1. By the end of the decade, the government's aim is that all consumers should have smart meters, giving them greater control over their energy usage and enabling commercial development of new products and services. Over the same period, more renewable generation will connect to the grid to meet renewable and emissions targets. There is also likely to be an increase in electric vehicle uptake and greater use of electricity for heating. During this transition to a low-carbon economy, the key challenges facing the gas and electricity industries are to provide affordable, secure and sustainable energy supplies.

1.2. The Department of Energy and Climate Change (DECC) takes the lead in tackling these challenges within government. DECC is managing an ambitious programme of reforms to implement government policies. This includes a package of measures that aim to bring forward investment in low-carbon generation through reform of the electricity wholesale market, as well as the development of a comprehensive electricity systems policy.[1] There is also a drive to improve energy efficiency, for example through the roll-out of smart metering and the Green Deal.[2] These policies and programmes often depend on or may cause changes to the detailed arrangements underlying energy markets.

1.3. Ofgem is the independent regulator of the gas and electricity markets. As such, we are responsible for maintaining the integrity of these detailed market arrangements in a way that protects the interests of consumers. We have a range of tools at our disposal to fulfil this role. For example, we have powers to grant, modify and enforce licences for the generation, transmission, transportation, distribution and supply of gas and electricity. We also approve industry-managed changes to the codes that underpin the operation of the energy market or, in specific instances, lead these changes where issues are complex and run across several codes. We set the incentive frameworks for the operation of the gas and electricity systems as well as periodic price controls covering networks. We also maintain an informed dialogue with industry to promote integration between policy objectives set by DECC and the evolution of market arrangements.

Smart metering roll-out

1.4. The government is intending to mandate the roll-out of smart gas and electricity meters to all domestic and many smaller non-domestic consumers.[3] The ambition is for the roll-out to be effectively complete by a target date in 2019. Energy suppliers will be required to install smart meters that meet a set of functional requirements defined by government. A key feature of these meters is that they will

[1] *Planning our electricity future: a White Paper for secure, affordable and low-carbon electricity*, DECC, July 2011.
[2] The Green Deal is a framework to enable companies to offer consumers energy efficiency improvements at no upfront cost and to recoup payments through a charge in instalments on the energy bill.
[3] Smaller non-domestic consumers are electricity consumers on Profile Classes 3 and 4 and non-domestic gas consumers with consumption of less than 732 MWh per year. This group encompasses a wide range of premises including micro-businesses, smaller commercial premises, light industrial sites and many public sector buildings.

be capable of measuring the amount of energy used in small blocks - each half hour for electricity and daily for gas. The meters must also be capable of remote two-way communications, thereby allowing them to be read or configured without the need to visit customer premises. The government intends to appoint a Data and Communications Company (DCC) to manage all communication of smart metering data to and from domestic premises. Suppliers will also be required to offer an in-home display to all domestic consumers.[4] Appendix 2 sets out more details on the proposed design of the smart metering system.

1.5. For larger non-domestic consumers, the government has already mandated the installation of advanced meters by 6 April 2014.[5] These meters must be capable of recording consumption at a high level of granularity, at least half-hourly for electricity and hourly for gas. Advanced meters must also be able to provide suppliers with remote access to this data. Unless specifically stated, we refer to smart and advanced metering collectively as 'smart' for the purposes of this document as well as both gas and electricity.

1.6. To deliver the roll-out of smart metering to domestic and smaller non-domestic consumers, DECC has established a central change programme – the Smart Metering Implementation Programme ("the DECC Programme"). Ofgem E-Serve managed the policy design phase of this programme on behalf of DECC.[6] This culminated in the publication, in March 2011, of the government's conclusions on the detailed policy design for the roll-out.[7] This marked the end of the first phase of the DECC Programme. In recognition of the scale of the Programme and the importance of government accountability for its delivery, DECC took direct responsibility in April 2011 for implementing the regulatory framework for the roll-out.

Ofgem's role

1.7. Ofgem's principal objective is to protect the interests of existing and future gas and electricity consumers, wherever appropriate by promoting effective competition. This involves identifying and tackling current issues as well as scanning ahead for opportunities and risks on the horizon. An example of our role in current issues includes the measures we are introducing as part of our Retail Market Review to promote effective competition and consumer engagement.[8] Another example is the work we are doing to facilitate the efficient rundown of traditional meters.[9]

[4] The in-home display will be capable of displaying near real-time information on energy consumption in a readily accessible form.
[5] The supply licences specify that advanced meters must be provided to electricity consumers on Profile Classes 5 to 8 and gas consumers with consumption of 732 MWh to 58,600 MWh per year.
[6] Ofgem E-Serve administers and monitors compliance with several government initiatives to encourage low carbon generation and energy efficiency.
[7] *Smart Metering Implementation Programme: Response to Consultation*, Ofgem/DECC, March 2011.
[8] *The Retail Market Review: Non-domestic Proposals*, Ofgem, Nov 2011; *The Retail Market Review: Domestic Proposals*, Ofgem, December 2011.
[9] *Review of Metering Arrangements - Initial Findings and consultation on proposed metering industry remedies*, Ofgem, December 2011.

Smart metering

1.8. Ofgem has an important role to play in helping to ensure that the interests of consumers remain protected, both during the transition to smart metering and once roll-out is complete. Some suppliers are already providing meters with smart functionality to domestic and smaller non-domestic consumers. These meters may or may not be compliant with the technical specifications being developed by the DECC Programme. While early deployments can help to bring forward the benefits of smart metering and opportunities for market development, it is important that consumers remain protected before the regulatory framework for the roll-out is in place.

1.9. In this respect, Ofgem has already taken steps, through its Spring Package, to protect current consumers where suppliers use the remote functionality of these meters to switch a customer to prepayment mode or to disconnect their supply.[10] We have also proposed measures to facilitate the change of supplier process for domestic consumers who are already receiving meters with smart functionality.[11]

1.10. To inform our work, we have conducted research into consumers' attitudes towards smart metering through our Consumer First Panel.[12] On behalf of DECC, we also managed the Energy Demand Research Project, a suite of trials that investigated consumers' responses to improved feedback on energy use. Some of these trials tested how smart gas and electricity meters, in combination with other measures, could help consumers better manage their energy consumption.[13]

Smart grids

1.11. The challenges presented by the transition to a low carbon economy will have a significant impact on electricity networks. Connection of local renewable and intermittent sources of electricity production, as well as the electrification of heat and transport, will require new approaches to the design, construction and operation of transmission and distribution networks. Smarter technologies, including smart meters, will have an important role to play in the development of more active, intelligent networks that can meet changing needs.

1.12. We are providing leadership on smart grids issues jointly with DECC. In April 2011, we established the Smart Grids Forum, with the aim of providing strategic input to the development of smart grids policy.[14] Ofgem is leading the Forum's work to develop an evaluation framework that can assess, at a high level, alternative network development options.[15]

[10] *Modification of the Standard Conditions of Gas Supply Licences granted under Section 23(3) of the Gas Act 1986 and the Electricity Supply Licences granted under Section 11A(3) of the Electricity Act 1989*, Ofgem, September 2011.
[11] *Commercial interoperability: proposals in respect of managing domestic customer switching where meters with advanced functionality are installed*, Ofgem, August 2011.
[12] *Ofgem Consumer First Panel Year 3 – 2010/2011: Findings from first workshops (held in November 2010)*, Opinion Leader, January 2011.
[13] *Energy Demand Research Project: Final Analysis*, AECOM, June 2011.
[14] For more details on the Smart Grid Forum, see the "Networks" section of the Ofgem website.
[15] *Smart Grids Evaluation Framework – A Smart Grids Forum Consultation Report*, Ofgem, November

1.13. Ofgem has also established the £500 million Low Carbon Networks (LCN) Fund to encourage distribution companies to trial innovative solutions to the challenges they face. We are implementing Innovation Stimulus arrangements to extend the principles of the LCN Fund to electricity transmission, and gas transmission and distribution. A number of the current projects we have funded through this mechanism involve smart metering. These projects are helping to improve our understanding of how consumers respond to better information about their consumption and to some of the products which might be developed from the platform of smart metering, such as time-of-use tariffs.

Smarter markets

1.14. To reflect the changes arising from smart metering, Ofgem established in April 2011 the Smarter Markets Directorate within its Markets Division. Its purpose is to nurture smarter markets in retail energy and the goods and services that affect how energy is used – helping realise for consumers the value of the opportunities created by the roll-out. This involves regulating existing frameworks effectively and influencing the shape of future regulatory frameworks.

1.15. Ofgem is providing constructive expertise and advice to support the work of the DECC Programme to implement the regulatory framework for smart metering. This is in line with our duty to protect the interests of existing and future consumers and the role we will have in monitoring and, where appropriate, enforcing compliance with new regulatory obligations.

1.16. It is important that we continually assess how decisions made in the near-term may affect the potential for smart metering to enable wider change in energy markets in the longer term. Ofgem's latest Corporate Strategy and Plan recognised the longer-term opportunities provided by the roll-out.[16] We committed to "develop the work programme required to create smarter markets from the platform of smart meters". This consultation document is the first step towards meeting that commitment.

1.17. In developing our strategy, it is important for consumers that we actively engage in relevant work being progressed at European level. For example, with other European regulators, we helped to develop advice on measures to facilitate the growth of a market for demand-side response in the electricity sector.[17] The European Commission has also recently published proposals to improve feedback on energy consumption and promote an energy services market.[18]

2011.

[16] *Corporate Strategy and Plan 2011-2016*, Ofgem, March 2011.

[17] *CEER draft advice on the take-off of a demand response electricity market with smart meters: A CEER Public Consultation Paper*, Council of European Energy Regulators, May 2011.

[18] *Proposal for a Directive of the European Parliament and of the Council on energy efficiency and repealing Directives 2004/8/EC and 2006/32/EC*, European Commission, June 2011.

Stakeholder engagement

1.18. Smart metering will have significant implications for how consumers engage with the energy market. Consumers' interests are therefore at the heart of our strategy work. In developing our thinking, we have held discussions with representatives of domestic and non-domestic consumers, including through our Small and Medium Users Group.[19]

1.19. Given the wide-ranging impacts of smart metering, the success of our strategy will depend on the support of a broad range of stakeholders. This includes parties that may enter the energy market because of the opportunities presented by smart metering. To reach out to all stakeholders, we held a briefing event in September 2011 to introduce our strategy, seek views on the scope of our work and our broad approach.[20] Since April 2011, we have also met bilaterally with a wide range of stakeholders including larger and smaller suppliers, network operators, energy services companies, central bodies and others.

1.20. We appreciate the time that stakeholders have contributed to our work so far. We welcome views on the issues raised by this document and look forward to further engagement during the consultation period.

Structure of the document

1.21. This document is structured as follows:

- Chapter 2 explains why we are developing a strategy for shaping market development and what this is likely to involve
- Chapter 3 considers the potential for market development from the platform of smart metering
- Chapter 4 discusses the opportunity for improving the industry processes that underpin the competitive market
- Chapter 5 sets out our conclusions and next steps.

1.22. Appendix 1 summarises the questions on which we are seeking views through this consultation. Appendix 2 summarises the proposed design of the smart metering system.

[19] A forum established by Ofgem for engaging with representatives of small and medium business consumers.
[20] A note of the event is available on the Ofgem website.

2. Developing a strategy

This chapter sets out our plans to develop a strategy for shaping market development. We consider the wider benefits that could be enabled by the roll-out of smart metering. We also describe the current market arrangements and discuss how these may constrain opportunities for market development.

2.1. The roll-out of smart meters over the coming decade has the potential to transform energy markets. Smart metering can empower consumers by providing valuable, accessible information to help them to use energy more efficiently. It can also help stimulate competition by facilitating new entry, creating opportunities for innovation in business models, products and services, and enabling faster and easier customer switching. In a wider environment of rising energy prices, the ability to get the best possible value out of each unit of energy will be critically important in making energy as affordable as possible for all consumers.

2.2. Smart metering is also a key enabling technology for improvements to energy systems and markets. Accurate, timely data can drive improvements to the central systems and processes that support market operation. The wider functionality of the meters, such as enabling remote load control, can also drive down transaction costs, which currently act as a barrier to greater demand-side participation in energy markets. A more responsive demand side can facilitate savings in wholesale balancing costs and from greater investment efficiency in generation and networks. It can also support the connection of low-carbon generation. In this way, the roll-out will be an important enabler for the development of smart grids.

2.3. The aim of the DECC Programme is to ensure the successful roll-out of smart metering to all domestic and many smaller non-domestic consumers. DECC is responsible for delivering the benefits outlined in its business case.[21] Just over half of these benefits are estimated to come from industry cost savings. They include, among others, avoided meter reading and site visits, lower customer overheads and debt handling costs, and better management of technical losses and electricity outages. The remaining benefits come from consumers saving energy. The DECC Programme has estimated almost £19 billion in benefits from the roll-out of smart meters.[22] The platform of smart metering can also help deliver wider benefits by promoting competition in energy supply and related markets, supporting the development of a smarter grid and improving security of supply.

2.4. As set out in Chapter 1, Ofgem has two key roles in relation to smart metering. The first involves using our regulatory expertise and market knowledge to engage constructively with DECC to provide advice and input to the Programme in a manner in line with our statutory duties. The second, and the focus of this consultation, involves taking proactive steps to protect and promote the interests of consumers during the transition to smart metering and beyond. This role will include scoping out what further changes to market arrangements may be enabled or required as a result of the roll-out.

[21] *Smart meter rollout for the domestic sector (GB)* and *Smart meter rollout for the small and medium non-domestic sector (GB)*, DECC, August 2011.
[22] Net present value of gross benefits over 20 years.

2.5. We are keen to facilitate the capture of the benefits identified by DECC. Our efforts to promote effective retail competition will help to ensure that industry cost savings are passed through to consumers. We are also keen to facilitate any wider benefits enabled by the platform of smart metering, where potential reforms to market arrangements lie outside the scope of the DECC Programme. By actively safeguarding the interests of consumers, Ofgem can also help create an appropriate regulatory environment to underpin consumer confidence and support the roll-out of smart metering.

Current market arrangements

Consumer engagement

2.6. The roll-out of smart metering presents a number of opportunities for energy market development. Positive engagement from consumers will be a critical success factor for realising the benefits from this market development. This engagement cannot be taken for granted. Energy consumers are a diverse group with a range of drivers, appetites and capabilities for engaging with the energy market. Many consumers currently see the energy market as complex and hard to navigate.[23] Only a small proportion of consumers actively seek out better deals. A significant proportion of consumers remain disengaged from the energy market altogether, in part due to a lack of trust in suppliers.

2.7. Looking forward, we recognise that a market with widespread deployment of smart metering is likely to be inherently more sophisticated. There is therefore a risk of entrenching some of the issues around consumer trust and engagement identified above. Without a rigorous focus on the consumer, many will not be able to realise these wider benefits and instead be exposed to new risks presented by market development on the back of smart metering.

2.8. This highlights the importance of our proposed Retail Market Review reforms in creating a base level of trust and engagement.[24] Over time, smart metering will provide further opportunities to build engagement and promote effective competition in the market. We will focus on consumers, particularly the vulnerable, to help them realise the benefits of smart metering and to protect them from any risks that present themselves as a result of the roll-out. For example, innovative tariffs have the potential to benefit consumers and the market by encouraging more efficient consumption decisions. There may, however, be a need for additional measures to help consumers to understand and engage confidently with such tariffs and to protect the interests of those who cannot engage effectively.

Market processes

2.9. In addition to issues around consumer engagement and protection, current market arrangements could restrict market development and the realisation of wider benefits. Existing arrangements reflect existing (non-smart) technology. As smart

[23] *The Retail Market Review - Findings and initial proposals*, Ofgem, March 2011.
[24] *The Retail Market Review: Domestic Proposals*, Ofgem, December 2011.

metering is rolled out, it is likely that changes to market rules, and industry systems and processes will be required to enable the market to develop.

2.10. Perhaps most importantly, arrangements for measuring consumption and charging customers take little account of the major impact of time of use on system costs. Revealing actual consumer preferences around consumption through reform to settlement and distribution charging arrangements would create sharper incentives around what investment in energy infrastructure is needed and when.

Our approach

2.11. Ofgem plans to develop a strategy for shaping market development from the platform of smart metering. This will include consideration of the reforms to market arrangements needed to help unlock benefits for consumers. This is in line with our statutory duty to protect the interests of future consumers, including their interests in respect of sustainable development and security of supply.

2.12. A range of factors and interdependencies need to be taken into account in developing such a strategy. While the focus of this consultation is predominantly on the potential for retail market development, we will need to consider arrangements for wholesale markets and network regulation. Any changes to market arrangements are likely to cut across the electricity and gas sectors, and to have implications for both domestic and non-domestic consumers. In addition, the possible timescales for any reforms could usefully be informed by the timings of other industry changes, such as the establishment and subsequent evolution of DCC.

2.13. It will therefore be beneficial to consider potential reforms in the round, identifying linkages across the supply chain and with other Ofgem, government, industry and European initiatives. Managing all these interactions will require a coordinated and coherent approach. Ofgem's ability to take an objective view across the supply chain will help to identify necessary reforms in a comprehensive way and enable them to be delivered in the interests of consumers. Engagement with stakeholders has revealed support for Ofgem developing a strategy in this way.

2.14. The DECC Programme is in the process of finalising key aspects of the design and implementation of the smart metering roll-out. This is therefore an appropriate time to gather stakeholder views on how the market may develop in the longer term on the back of smart metering. This scoping consultation marks the first stage of the process to develop a strategy. We then plan to: set up a rolling programme of work to analyse potential reform areas in more depth; oversee implementation of any changes; and monitoring their effectiveness where necessary.

2.15. The work programme will set out what issues should be assessed, when and by who. Consideration of particular reform areas will be prioritised depending on the size of potential consumer benefits and the extent to which these benefits can be realised sooner rather than later. This process will necessarily include consultation on the nature of any reforms as well as when and how best to implement them.

2.16. In terms of implementation of any reforms, we expect Ofgem's role to vary across each area. We have a range of useful tools at our disposal. These range from proactively making appropriate changes to licences or undertaking a Significant Code Review[25], to approving industry-led code modifications[26]. Industry will therefore have an important role to play in developing and implementing any reforms.

2.17. An important product of the work programme will be a roadmap for implementation of any reforms. This will help guide the process of reform in the light of other significant developments in the energy sector, such as the establishment of DCC. Such a roadmap should help provide greater certainty for market participants in planning their investments over the medium term. An important consideration will be to avoid implementing changes in a way or at a time that could jeopardise the successful roll-out of smart metering.

2.18. We expect our strategy to evolve over time to take into account, for example, changes to government policy objectives, developments in consumer engagement and technological advances. This process will be informed by a continual dialogue with stakeholders.

Analytical framework

2.19. We intend to adopt a systematic, evidence-based approach to assessing the nature and timing of potential reforms to market arrangements. This will involve identifying key linkages with other areas. Our broad approach is set out below:

- Identifying the opportunities for market development presented by the roll-out of smart metering under a range of plausible scenarios
- Assessing the ability of current market arrangements to facilitate these opportunities, both in terms of enabling consumers to realise benefits and protecting them from risks
- Identifying the reforms to market arrangements needed to address any constraints identified and to promote consumer engagement
- Understanding the costs and benefits associated with particular reforms
- Undertaking research to inform our understanding of consumer interests
- Assessing when it would be sensible and practical to implement any reforms, such as the necessary level of smart meter penetration among consumers and any synergies with other related industry changes, and whether there should be distinct phases along the way.

[25] The Significant Code Review process is designed to facilitate complex and significant changes to a range of industry codes. It provides a role for Ofgem to undertake a review of a code-based issue and play a leading role in facilitating code changes through the review process.
[26] In many cases, Ofgem is required to approve or reject proposed modifications to industry codes. In doing so, we consider whether the proposal will better meet the stated objectives of the industry code in question, as well as our duties and functions.

2.20. This consultation provides an opportunity for stakeholders to provide their views on each of these areas across the range of possible market developments. We will also seek to learn as much as possible from international experiences of smart meter deployments and subsequent developments in energy markets.

Outline of reform areas

2.21. Stakeholder feedback so far has underlined the role that smart metering can play in enabling wider market development. We welcome the various initiatives that are already underway across industry to consider potential changes to systems and processes that can harness the functionality provided by smart metering. We will continue to engage with and support this work where appropriate.

2.22. One of the key messages from stakeholders has been the importance of creating the right market conditions to support innovation in products and services. Related to this, stakeholders have emphasised the opportunity presented by smart metering to improve the processes that support the operation of the market.

2.23. It is along these two broad themes that we consider potential reforms. In Chapter 3, we discuss opportunities for market development and how to create the right conditions for shaping this development in the way that best protects and promotes consumers' interests. In Chapter 4, we focus specifically on potential improvements to underlying market processes, which are key conditions for supporting market development.

2.24. Within each chapter, we outline a number of potential areas for reform. For each, we describe the subject area; explain how it is affected by the roll-out; summarise the current market arrangements and consider how they might constrain market development; and highlight a range of issues for consideration. In each area, we have also developed a proposition. These are not formal proposals; their primary purpose at this stage is as a vehicle to support effective consultation. They have been developed based on preliminary analysis of smart meter roll-out impacts. We are particularly interested in views on whether the propositions hold and what issues should consequently be considered to be within the scope of a work programme to build smarter energy markets.

3. Enabling retail market development

This chapter describes the key opportunities for development in retail energy markets arising from the roll-out of smart metering. We highlight the changes to current market arrangements that may be required to enable markets to develop in these areas in a way that benefits consumers and safeguards their interests during the roll-out and beyond. We also set out key issues in each area.

Question 1: Do you agree with the propositions set out in this chapter?

Question 2: For each proposition, have we identified the elements of current market arrangements that could help or constrain the realisation of benefits for consumers?

Question 3: For each proposition, have we identified the key issues, such as the timescales for any changes to market arrangements?

Question 4: Are there additional opportunities for development in retail energy markets that we should include in the scope of our work?

3.1. The platform of smart metering will facilitate a range of significant developments in retail energy markets. Reforms to current market arrangements will be needed to create the right conditions for consumers to fully realise the benefits.

3.2. We want retail energy markets that make it easy for all consumers to make well-informed decisions on how and when to consume energy. We can support this by promoting competitive gas and electricity markets, which will be the key driver in delivering benefits for consumers. Within this framework, it will be up to existing and new market participants to innovate in the products and services they offer.

3.3. We have identified four main areas for development that are likely to impact on energy consumers:

- Time-of-use tariffs – suppliers could develop innovative tariffs that reward consumers for using energy at off-peak times rather than peak times
- Demand-side response – in addition to time-of-use tariffs, suppliers and others could develop new offerings that reward changes to consumption patterns, in particular products designed to shift energy usage away from peak times
- Energy services – new services could develop around the consumption data provided by smart metering, and existing services will become available to a wider range of consumers
- Payment methods **–** smart metering should make it easier for a wider range of consumers to switch between payment methods, improving customer service and reducing the costs of serving customers who pay in advance.

3.4. The scale of the longer-term opportunity for market development around time-of-use tariffs and demand-side response appears greater in electricity than in gas. For these areas, we therefore focus mainly on electricity. Nevertheless, we welcome views on related opportunities in the gas market. Our discussion of energy services and payment methods incorporates both the gas and electricity supply markets.

Time-of-use tariffs

3.5. This is the first of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 1: **Time-of-use tariffs should help many consumers lower their energy costs, but improved engagement will be needed to help all consumers make informed choices.**

Background

3.6. Time-of-use tariffs charge different prices at different times. Through such tariffs, consumer prices can better reflect changes in the cost of supply, for example at different times of day. As such, these tariffs are more a feature in electricity than in gas. They can be either static or dynamic. Static time-of-use tariffs fix prices and times at which these apply. Dynamic tariffs provide for price or pricing structure to vary at short notice in reaction to market events, subject to contractual terms.[27] Time-of-use tariffs are one way of encouraging demand-side response, which is discussed more fully in the next section.

3.7. It is estimated that around four million domestic electricity consumers (or around 15 per cent) are already on some form of time-of-use tariff.[28] The most common tariffs are Economy 7 and Economy 10, which offer cheaper prices overnight. Around three million customers on these tariffs have teleswitched meters, which allow either suppliers to remotely configure meters or network operators to control usage.[29] Time-of-use pricing is also used in the non-domestic electricity market.

Impact of smart meter roll-out

3.8. Smart metering will make time-of-use tariffs easier to switch to and cheaper to provide than today. Domestic and non-domestic consumers will no longer need to change their meter to choose a time-of-use tariff.[30] Instead, suppliers will be able to reconfigure meters remotely, reducing the need for site visits. Furthermore, all

[27] Critical peak pricing is one form of dynamic tariff, which allows suppliers to increase the price of electricity at short notice, usually over the peak period. Real-time pricing is another type of dynamic tariff which allows retail prices to change more frequently.
[28] *Variation in tariff types and energy bills,* DECC, March 2010.
[29] *GB Electricity Demand – realising the resource*, Sustainability First, October 2011.
[30] Electricity smart meters will have 48 configurable consumption registers, allowing consumption to be apportioned between half-hourly time periods.

domestic consumers will be offered an in-home display by their supplier, allowing them to view price and consumption information. Suppliers will also have the option to use any other means to communicate such information to their customers, for example via the internet or mobile telephones.

3.9. Some consumers could benefit directly from time-of-use tariffs without changing their consumption, providing most of their consumption already coincides with cheaper (off-peak) times of the day. Time-of-use tariffs can also encourage consumption shifts from peak times to off-peak times.[31] Consumers can respond in a number of ways. Some move activities to other times of day, such as using washing machines. Looking ahead, consumers could opt to give up some control over their consumption, allowing part of it to be shifted to other times of the day.[32]

3.10. Some consumers are unlikely to benefit from choosing time-of-use tariffs. For example, for those whose consumption coincides more with higher-cost (peak) times, this could actually increase their bills if they are unable to shift their usage to lower-cost times or do not understand the tariff they are on.

3.11. On an aggregate level, shifting consumption to off-peak times can benefit all consumers indirectly, by helping to lower the overall costs of generating and transporting electricity. Over time, the value of being able to adjust demand will increase as more wind generation connects to the system.[33] Wider uptake of time-of-use tariffs could therefore increasingly contribute to lower industry costs.

Current market arrangements

3.12. There are a range of licence conditions currently in place to protect consumers in relation to their tariff decisions. For example, suppliers must provide complete, accurate information that is easily understood when marketing their tariffs to domestic consumers.[34] They must also provide clear information to domestic consumers about a variety of aspects of their consumption, including information on energy efficiency, their tariff name, discount or premium to their standard tariff and on their own consumption.[35]

3.13. As discussed in Chapter 2, our Retail Market Review has identified low and falling levels of consumer engagement in retail energy markets. We have therefore put forward proposals aimed at promoting competition and consumer engagement.[36] More effective and widespread consumer engagement will provide a vital foundation for all consumers to benefit fully from developments related to smart metering. This

[31] See examples in *Smart Tariffs and Household Demand Response for Great Britain*, Gill Owen and Judith Ward, March 2010.
[32] Whether by buying items which respond automatically to an external signal or by allowing a third party to control their usage.
[33] The intermittent nature of wind generation requires more adjustment of supply and demand to balance the system.
[34] Standard Licence Condition 25 of the gas and electricity supply licences.
[35] Standard Licence Conditions 31 and 31a of the gas and electricity supply licences.
[36] Key elements of these proposals include a single standard tariff per payment method for each supplier, with a standardised element. We also proposed that all non-standard tariffs would have a fixed duration, and unilateral variations to non-standard tariffs would be disallowed. For more details see *The Retail Market Review: Domestic proposals*, Ofgem, December 2011.

includes addressing tariff complexity in the market today, so that consumers can better understand more sophisticated tariffs in future. Time-of-use tariffs could be more difficult for consumers to understand, so it is crucial for consumers to have the right information presented simply.[37]

Key issues

3.14. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

3.15. We consider that our Retail Market Review proposals are unlikely to deter suppliers from offering time-of-use tariffs. Suppliers would still be able to offer non-standard tariffs of fixed duration with prices that vary by time-of-use. The challenge for suppliers will be to design straightforward tariffs that consumers can understand. We recognise that, in the medium term, we will need to review the impact of regulatory arrangements on the development of time-of-use tariffs. These arrangements will need to facilitate innovative tariffs and help consumers to benefit from any new tariff structures that emerge. Relevant aspects of the regulatory framework are likely to include licence conditions on provision of consumption information to consumers, sales and marketing practices and tariff design.

3.16. Time-of-use tariffs could have different impacts on different groups of consumers, including both those who take them up and those who do not. For example, consumers' desire and ability to change the timing of their consumption will depend on their individual circumstances. We will carry out distributional analysis to understand these potential effects, including on vulnerable consumers.

Demand-side response

3.17. This is the second of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 2: **More efficient use of demand-side response can lower overall energy costs, but this will need coordinated changes to regulatory and commercial arrangements.**

Background

3.18. Demand-side response shifts consumption from one time of day to another. Different consumers can shift their electricity consumption in different ways using a range of different technologies, including micro-generation and storage. Demand-

[37] Research carried out for our Retail Market Review found that Economy 7 consumers have greater difficulty comparing tariffs. *Consumer reactions to varying tariff comparability, quantitative research conducted for Ofgem*, Ipsos MORI for Ofgem, October 2011.

side response also varies in terms of the scale of change in demand, the speed with which it can be delivered and the duration for which it can be provided.

3.19. Demand-side response already contributes to electricity system balancing today, but is mostly provided by relatively large non-domestic consumers. A range of different parties can benefit from using demand-side response, including the following:

- The System Operator currently uses demand-side response to help in physically balancing the electricity system. The System Operator uses demand-side response mostly for providing Short-Term Operating Reserve.[38] Overall, demand-side response currently accounts for less than 1 per cent of the System Operators' total balancing services.[39]

- Suppliers contract for between 0.5–1GW of demand-side response per year, either through Triad charging or by contracting directly with larger non-domestic consumers.[40] Triad charging applies to some transmission charges. This method links charges to customers' maximum demand during three periods of maximum system demand, incentivising suppliers to reduce their customers' maximum demand at peak periods.

- Network operators use demand-side response to reduce the need for investment, by reducing flows through their networks at peak times. Network operators currently only use demand-side response in small volumes. They are exploring the potential for demand-side response further, including through LCN Fund projects.[41]

- Some consumers contract with the parties above indirectly via aggregators. This can help make providing demand-side response more viable for smaller consumers.

Impact of smart meter roll-out

3.20. For consumers currently without a half-hourly meter, smart metering will remove a key technological barrier to demand-side response. By recording half-hourly consumption data, smart metering makes contracting for demand-side response feasible by providing a means to verify changes in consumption. A combination of two-way communication and load-switching functionality provided by smart metering could make it easier to offer consumers contracts for limiting load. These changes will make demand-side participation a possibility for the mass market, rather than just for some larger non-domestic consumers as at present.

[38] Of 4.7GW which the System Operator has procured for operating reserve in 2011/12, around 7.5 per cent was procured from demand-side response (excluding that provided by back-up generation). *GB Electricity Demand – realising the resource*, Sustainability First, October 2011.
[39] Measured by volume. Source: Ofgem calculations based on National Grid data.
[40] *GB Electricity Demand – realising the resource*, Sustainability First, October 2011.
[41] More information on the LCN Fund projects is available on our website.

3.21. Ofgem published a discussion paper last year that outlined the potential benefits of demand-side response.[42] For example, consumers can be rewarded through better contract terms for supply or fixed discounts on their bills. Furthermore, demand-side response can help to lower overall system costs by reducing investment in generation and in networks.

3.22. Demand-side response can also reduce carbon emissions and contribute to energy sector sustainability in a number of ways. First, it can help enable more wind generation on the system, by lowering the consequent increase in overall balancing costs. Second, shifting consumption from peak to off-peak times could lower carbon emissions by reducing use of high-emissions generation, such as oil-fired plant, for balancing. Third, some temporary demand reduction can reduce overall demand, where it does not lead to commensurate increases at other times of day.[43]

3.23. The potential value of demand-side response is likely to increase over time, driven by two key factors. First, balancing the electricity system will become more challenging as, for example, volumes of wind generation increase and there is more demand from electric vehicles and heat pumps. Second, electrification of heat and transport could make it easier to shift consumption between different times of day. There is little consensus as to whether demand side in Great Britain will be more valuable when used to mitigate network or generation investment.[44]

Current market arrangements

3.24. There are various aspects of current market arrangements that are likely to constrain the benefits of a more active demand side, even with the roll-out of smart metering. These factors could affect the uptake of all demand-side response, including through time-of-use tariffs.

3.25. For the domestic and smaller non-domestic segments of the market, the current settlement arrangements break the link between suppliers' costs and their customers' within-day changes in consumption. This is due to the extensive use of profiling and estimates. Enabling half-hourly settlement could therefore make price signals sharper and so increase the incentives for suppliers to use demand-side response. Settlement arrangements are discussed further in Chapter 4.

3.26. Variations in suppliers' unit costs over the course of the day could encourage them to use demand-side response to shift their customers' consumption from higher-cost periods to lower-cost periods, thereby lowering their overall costs of supply. However, even if settlement were half-hourly, suppliers' unit costs would vary little over the course of the day. A number of factors influence the variation in

[42] *Demand Side Response – A Discussion Paper,* Ofgem, July 2010.
[43] For example, temporarily reducing building temperature (and therefore electricity consumption for heating purposes) could provide demand-side response, without requiring a commensurate increase in building temperature at another time.
[44] One study estimated that by 2050 demand-side response could reduce average annual supply-chain costs by 9-10 per cent, depending how it is used. However, this study examined each scenario in isolation and did not estimate optimal distribution of demand-side response between these two uses. See *Demand-side response: conflict between supply and network-driven optimisation*, Pöyry and the University of Bath for DECC, November 2010.

suppliers' costs throughout the day, including the effect of wholesale costs, cash out prices, network charging and System Operator costs. Wholesale costs are the largest component of suppliers' costs, at around 61 per cent of costs on average for all domestic and non-domestic electricity consumers.[45] So far this year, however, wholesale prices have differed on average by only 20 per cent between the most expensive and least expensive times of day.[46]Wholesale prices are in part influenced by the costs which suppliers face if they do not balance supply and demand. Imbalance costs are also competitively determined through the cash out regime, but the framework itself is governed by the balancing and settlement code.

3.27. Existing network charging arrangements also dampen incentives to both network operators and suppliers to use demand-side response. These arrangements are complex and vary according to the type of consumer. For a number of years, Ofgem has been encouraging network operators to make their charges more cost-reflective and transparent, in part to reward demand-side response and distributed generation where this brings network benefits. In April 2010, electricity distribution network operators implemented a Common Distribution Charging Methodology, which made significant progress towards cost-reflective distribution charges. Network operators have an important role in continuing to develop these charging arrangements.

3.28. The System Operator has specific procurement rules that determine the types of services with which it can balance the system. For example, to provide Short-Term Operating Reserve, parties must make available a minimum volume of change in demand and a minimum delivery period. Demand-side response also needs to meet additional requirements to participate. These rules may act as a barrier to increased use of demand-side response. Ofgem is currently considering whether there is scope for the System Operator to address some of these issues through the development of principles and policy for the System Operator incentive schemes from 2013.

3.29. The issues outlined above are influenced by different regulatory frameworks. For example, wholesale prices are determined competitively, network charging methodologies are industry led, while distribution price controls are set by Ofgem. Each framework has different timescales for decisions, creating difficulties in coordinating policy. Perhaps partially as a consequence, demand-side response is currently allocated based mainly on bilateral contracts between individual market participants.

Key issues

3.30. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

[45] Based on Consolidated Segmental Statements of the former incumbent energy suppliers, for calendar year 2010.
[46] Ofgem calculations based on APX data, using half-hourly within-day products, comparing peak (7am to 7pm) with off-peak (7pm to 7am), averaged from 1 January 2011 to 27 November 2011.

3.31. Smart metering provides an opportunity for all market participants to use demand-side response more efficiently and so reduce overall system costs. The reward to individual consumers should reflect this value. One way to signal value is through cost-reflective pricing, potentially differentiated by time of day, location and characteristics of the services being provided. However, consumers generally want simplicity and certainty in their energy bills.[47] These considerations will need to be balanced when assessing whether changes to regulatory arrangements can help enable benefits for consumers.

3.32. Current commercial and regulatory arrangements may not facilitate the efficient allocation of demand-side response in future. Alternative commercial models could provide more opportunities for parties to provide and use demand-side response. Analysis of these models will need to accommodate a range of complexities, including:

- First, different parties are interested in using different types of demand-side response. For example, suppliers need demand-side response most at times of peak price, but network operators need it most at times of peak local demand or consumer export. Increasingly, these different peaks are likely to diverge as more wind generation is connected. Therefore, if commercial frameworks favour one party over another, this could bias demand-side response use towards one purpose over another.

- Second, one party's use of demand-side response can have knock-on impacts for other parties throughout the system. These impacts can be physical or financial. For example, a supplier using demand-side response will have an impact on network usage. Extensive use of bilateral arrangements may not necessarily incorporate these direct impacts.

3.33. A number of forthcoming policy decisions could affect future prospects for demand-side response. Some of these go beyond Ofgem's remit. Most notably, the capacity mechanism proposed by DECC in its Electricity Market Reform proposals could encourage demand-side response provision.[48] Elsewhere, the DECC Programme's decisions on access to smart metering data and the capability of wide-area communications could also have an effect.[49] For example, these decisions could affect the ability of non-licensed companies, such as energy services companies, to compete with suppliers in providing services that require use of this data. DECC are taking these issues into account as part of their policy development work and we will continue to engage constructively to provide input into these decisions.

[47] *Ofgem Consumer First Panel Year 3 – 2010/11, Findings from first workshops (held in November 2010)*, Ofgem, January 2011 and *Tariff Comparability Models, Volume 1 – Consume qualitative research findings*, Creative Research for Ofgem, October 2011.
[48] The Government-led Electricity Market Reform project aims to develop a new wholesale market framework that will ensure secure, affordable and low-carbon electricity supplies.
[49] See Appendix 2 for further details of the functionality that smart metering will provide.

Energy services

3.34. This is the third of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 3: **Innovation in energy services would increase the consumer benefits of smart metering and can happen without major change to the regulatory framework.**

Background

3.35. Energy suppliers provide electricity and gas to consumers. There is also a wide range of energy services that can assist both domestic and non-domestic consumers with decisions about their energy consumption. These range from consumer advice to the provision of final energy services, such as heating or lighting.

3.36. By way of example, domestic consumers can obtain advice from price comparison sites as to which tariffs suit them best. In the non-domestic sector, some consumers use energy management services to understand their energy use better and so reduce their consumption and bills. Both suppliers and others, such as energy services companies, provide these services.

Impact of smart meter roll-out

3.37. Consumers will be able to access their smart metering data, or opt to give others access, in various ways. Domestic and smaller non-domestic consumers will have access to their data through their Home-Area Network (HAN). Domestic consumers will also be able to opt to give others access to their data through the Wide Area Network (WAN).[50] The availability of data via the HAN or WAN could reduce the need for any up-front expenditure on hardware to make data accessible. In this way, smart metering could enable development of the energy services market. This could include domestic consumers being offered the kinds of energy services which non-domestic consumers can access at present.

3.38. In addition to helping consumers to save money directly, increased take-up of energy services could also generate indirect benefits to consumers. To the extent that energy services improve engagement, they could help to promote competition in energy supply. Energy services consisting of contracts for final products such as heat, rather than for fuels, would give providers incentives to improve efficiency, rather than relying on consumers to take action themselves. This is because consumers would pay for an outcome (a warm home, for example), while fuel costs would be paid by the provider. By making data access easier, smart metering could also support 'community buying' whereby consumers combine their buying power to purchase energy together, helping them to obtain better deals and save money.

[50] DCC will provide some services via the WAN, while the HAN will enable access to data on the smart meter itself, with additional technology required. Appendix 2 includes further details of functionality.

Current market arrangements

3.39. Ofgem does not regulate the provision of energy services directly. Nonetheless, we do have powers over licensed parties who provide energy services. For example, suppliers are already required to separate charges for energy supply from charges for any other goods or services.[51] We also have consumer protection powers over any business which harms the collective interests of domestic energy consumers.[52]

3.40. Current market processes, such as settlement and change of supplier, could limit the development of the energy services market. Improved electricity settlement would target suppliers' costs better to the half hour in which they are incurred. This could encourage suppliers to offer new services to their customers, for example, to agree to restrict their consumption at certain times of day. Faster switching could encourage the development of more energy services, for example to help consumers to choose tariffs which suit them best. Settlement and change of supplier arrangements are discussed further in Chapter 4.

Key issues

3.41. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

3.42. Market arrangements will influence how energy services develop. The regulatory framework should help consumers to realise the value of their smart meter data, including being able to access innovative and competitively priced products and services. A number of policy decisions to be made as part of the DECC Programme could be important in this regard. For example, decisions relating to data access will have implications for the ability of energy services companies to compete with energy suppliers in the energy services market.

3.43. The regulatory framework should also provide appropriate consumer protection. We have already committed to assessing whether additional safeguards are necessary in response to future developments in energy services.[53] For example, the bundling of energy services with energy supply contracts could affect the development of the energy services market, as well as the supply market itself. First, this could have impacts on consumers, by hampering their ability to choose the best tariff for them. Second, bundling could give incumbent energy suppliers a competitive advantage over new entrants in both markets. We would also want to consider potential issues of consistency in consumer protection depending on whether energy services are provided by licensed suppliers or others.

3.44. The provision of advice to consumers on tariffs and switching will become increasingly important as suppliers start to offer more sophisticated time-of-use

[51] Standard Licence Condition 22.4(b) of the gas and electricity supply licences.
[52] The Authority is designated as an enforcement body for the purposes of part 8 of the Enterprise Act 2002. The Authority's powers do not apply to business-to-business issues.
[53] *Corporate Strategy and Plan 2011-2016*, Ofgem, March 2011.

tariffs. The Confidence Code is a voluntary code that currently provides consumers with some assurance when using switching sites, for which Consumer Focus currently has responsibility. We have offered to take on responsibility for the Code.[54] Whatever happens, consideration will need to be given to how to accommodate time-of-use tariffs and bundled energy services in the Code.

3.45. The need for up-front investment could deter take up of some energy services, such as home automation. Vulnerable consumers in particular may be unable or reluctant to fund these costs. At present, some non-domestic energy services providers fund this investment, but need longer-term contracts against which to secure this investment. The government's Green Deal proposals aim to address this issue in relation to energy efficiency improvements, by allowing companies to finance up-front investment using future revenues recovered through consumers' energy bills.[55]

3.46. Another issue is the need to understand the potential impacts of developments in energy services on different groups of consumers. Energy services can help engaged consumers to find energy supply contracts that suit them better, such as time-of-use tariffs. Disengaged consumers may not achieve the same benefits. Consequently, developments in the energy services market could widen the difference between outcomes for engaged and disengaged consumers.

Payment methods

3.47. This is the fourth of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 4: **Consumers will have more payment options, without changes to regulatory arrangements beyond those envisaged as part of the smart metering roll-out.**

Background

3.48. Domestic gas and electricity consumers can pay for their energy in a range of different ways. These currently include prepayment, standard credit (cash or cheque) and direct debit. Of these, direct debit is the most popular payment method, used by 49 per cent of domestic consumers. Around 33 per cent pay by standard credit and 13 per cent use prepayment.[56]

3.49. Prepayment allows consumers to pay up front for their energy and know exactly how much they have spent. However, consumers currently need a prepayment meter in order to pay in this way. Furthermore, a bespoke payment infrastructure (PPMIP) is required.[57] These arrangements can lead to mis-directed

[54] For further details, see our response to the BIS Consultation on Empowering and Protecting Consumers.
[55] *The Green Deal and Energy Company Obligation - Consultation Document*, DECC, November 2011.
[56] *The Retail Market Review – Findings and Initial Proposals,* Ofgem, June 2011.
[57] Prepayment Meter Infrastructure Provision (PPMIP) is a system for reconciling back to the relevant

payments, which can increase industry costs. The higher cost to serve prepayment customers means that prepayment tariffs are often more expensive than equivalent tariffs with different payment methods.

3.50. In certain circumstances on grounds of debt, suppliers can require their customers to use prepayment meters.[58] Despite prepayment tariffs often charging more than equivalent others, some consumers opt for prepayment because it allows them to budget more effectively.

Impact of smart meter roll-out

3.51. Smart meters can operate in either prepayment or credit mode. Two-way communication allows remote switching between the two, eliminating the time, cost and inconvenience of exchanging meters. Furthermore, the services provided by DCC will in time remove the current need for a PPMIP. Instead, suppliers will be responsible for collecting payments and passing top-up data to smart meters via DCC. DECC estimate that together these cost savings will amount to around £1 billion in net present value of gross benefits over 20 years.[59]

3.52. Smart metering will therefore improve consumers' choices over payment methods. Topping up should also be more convenient, as more ways to pay become available to consumers. For example, prepayment customers may in future be able to pay online or by phone. Suppliers are currently required to offer consumers the option to pay in cash. We do not anticipate this option being removed.

Current market arrangements

3.53. A range of licence conditions are in place to protect domestic consumers in relation to payment methods, including:

- Suppliers with more than 50,000 domestic customers have an obligation to offer a choice of payment methods
- Under certain conditions, suppliers must offer prepayment meters or payment by instalments to indebted customers who have difficulty paying their bills
- If customers build up a significant amount of credit, suppliers must refund this credit
- Suppliers must be able to objectively justify price differentials between payment methods.[60]

energy supplier the advance payments made by prepayment customers at outlets, such as corner shops or post offices.

[58] The Gas Act and the Electricity Act give suppliers powers to install a prepayment meter with seven working days notice if a customer does not pay charges due for energy supply within 28 days of receiving a written request.

[59] *Smart meter rollout for the domestic sector (GB)*, DECC, August 2011.

[60] Standard Licence Conditions 25a and 27 of the gas and electricity supply licences..

3.54. To help ensure domestic consumers remain sufficiently protected during early roll-out of smart metering, we launched our Spring Package in February 2011.[61] These measures include increased consumer protection around remote disconnection and, for consumers moving to prepayment, requirements on suppliers to provide information about how to use the prepayment meter.[62] The measures supplement pre-existing requirements for suppliers to provide information on the advantages and disadvantages of prepayment.[63] We have also proposed measures to facilitate commercial interoperability, so that domestic consumers who already have a meter with smart functionality, or receive one before the mandated roll-out, can switch easily.[64]

3.55. During initial discussions, stakeholders did not identify any major constraints to the development of current or new types of payment methods under the current arrangements.

Key issues

3.56. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

3.57. Current market arrangements relating to prepayment were mainly implemented to address issues around traditional metering. As discussed, we have recently implemented consumer protections relating to smart prepayment and have also proposed further measures to promote commercial interoperability when a consumer switches supplier. We will continue to monitor whether additional protections are needed during the roll-out and beyond.

3.58. One challenge around the transition to smart metering is the need to maintain the existing PPMIP arrangements as an ever decreasing number of consumers utilise its services. This could be increasingly detrimental to consumers remaining on traditional prepayment meters, if PPMIP costs are paid only by those consumers. Vulnerable consumers are over-represented among consumers currently using prepayment meters. The opportunity to lower costs by retiring PPMIP services once all prepayment customers have smart meters could encourage suppliers to accelerate deployment to these customers as part of the mass roll-out.

3.59. Some consumer representatives have expressed concern that suppliers may leave prepayment customers to the latter stages of the roll-out. This could delay benefits to this group of consumers, who already stand to gain less on average from smart metering than other groups in terms of energy savings.[65] There is also a risk

[61] *Smart Metering Spring Package – Addressing Consumer Protection Issues*, Ofgem, February 2011.
[62] Domestic consumer protection licence conditions are now in force. Non-domestic consumer protection measures are currently being consulted on; see *Smart Metering Consumer Protections 'Spring Package' – non domestic*, Ofgem, November 2011.
[63] Standard Licence Condition 28 of the gas and electricity supply licences.
[64] *Commercial interoperability: proposals in respect of managing domestic customer switching where meters with advanced functionality are installed*, Ofgem, August 2011.
[65] DECC's impact assessment for the roll-out of smart metering estimates that gas prepayment customers will, on average, make lower energy savings than gas credit customers. There is no similar differential

that the use of smart meters in prepayment mode prior to the DCC starting operation could be detrimental to consumers, if these are not compatible with the smart meter design to be specified by the DECC Programme. Our commercial interoperability proposals are designed, in part, to mitigate these concerns.

3.60. For consumers to make well-informed decisions regarding their payment method, it will be important that they understand their payment options using a smart meter and how to use it in prepayment mode. In addition to existing licence conditions around payment methods, the current draft of the proposed Smart Meter Installation Code of Practice commits suppliers to providing information to consumers on how to top up their smart meters when operating in prepayment mode.[66] Meanwhile, the DECC Programme is developing a consumer engagement strategy to support the roll-out. This may include proposals relating to prepayment. We understand that DECC intends to consult on a draft strategy in due course.

Questions for consultation

3.61. In this chapter, we have described the potential opportunities and risks from developments in retail markets from the platform of smart metering. We have also identified how current market arrangements may need to change to facilitate this development in a way that benefits all consumers and safeguards their interests during the roll-out and beyond.

3.62. We welcome views on whether we have identified the main areas of potential market development. For each area identified, we welcome views on whether our propositions hold and whether we have highlighted the key issues for consideration in developing a strategy for shaping market development. The full list of consultation questions can be found in Appendix 2.

estimated for electricity customers. *Smart meter rollout for the domestic sector (GB)*, DECC, August 2011.

[66] All energy suppliers will be required to develop and comply with a new code of practice that will set minimum standards of service that consumers should receive before, during and after a smart meter installation visit. The Energy Retail Association is developing the code of practice. *Draft Installation Code of Practice*, Energy Retail Association, December 2011.

4. Improving market processes

This chapter describes the key areas where the roll-out of smart metering enables or requires change to the processes that underpin the operation of the market. We discuss how changes in these areas could deliver benefits, including enabling development of retail energy markets. We also set out key issues in each area.

Question 5: Do you agree with the propositions set out in this chapter?

Question 6: For each proposition, have we identified the right sources of costs and benefits associated with achieving them?

Question 7: For each proposition, have we identified the key issues, such as the timescales for any changes to market arrangements?

Question 8: Are there additional opportunities to reform market processes that we should include in the scope of our work?

4.1. The consumer experience of the gas and electricity markets depends significantly on the design and effective functioning of detailed industry systems and processes that support the operation of the competitive market.

4.2. The roll-out of smart metering provides an opportunity to improve the design and operation of these back office functions in a comprehensive and coordinated way. Such changes should deliver cost savings for industry that can be passed through to consumers. Reform can also help to create the conditions for the development of smarter markets from the platform of smart metering and thereby help to unlock the consumer benefits described in Chapter 3.

4.3. Market processes are set out in detailed industry codes with which licence holders must comply. Since market opening in the 1990s, these codes have been subject to hundreds of changes through modification processes driven by market participants. Typically, these changes have been incremental in nature. The wide ranging and inter-related nature of changes to multiple industry codes that are required or enabled by smart metering may require a more strategic approach.

4.4. In this chapter, we focus on four areas where opportunities exist to realise cost savings, improve consistency and remove constraints to the development of smarter markets:

- Gas and electricity settlement arrangements
- Change of supplier processes
- Electricity data processing and aggregation services
- Structure of industry codes.

Settlement arrangements

4.5. This is the fifth of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 5: Settlement arrangements should use actual daily (gas) and half-hourly (electricity) meter reading data in order to improve their accuracy and efficiency.

Background

4.6. Wholesale market settlement is the process that reconciles the amount of energy that an electricity supplier or gas shipper has arranged to be put on to a distribution network and the amount that has (or is estimated to have) been taken by its customers.[67] Where an electricity supplier or a gas shipper is not able to match its allocated amount of energy with its energy purchases for each settlement period, it will be required to pay charges to reflect the costs incurred by the System Operator in balancing the system ("imbalance charges").

4.7. This process underpins the allocation of energy and distribution costs in the gas and electricity markets.[68] While there are common principles between gas and electricity, the detailed arrangements differ substantially In particular, the settlement period in gas is daily while in electricity it is every half hour. In both markets, the accuracy of the settlement requirements depends on the size and type of customer and is supported by different requirements for submitting meter readings. In summary:

- Large consumers are settled on the basis of actual meter readings provided for each settlement period.[69]
- Electricity consumers that are not settled on a half-hourly basis are grouped according to type and typical consumption profile (Profile Class). Consumption is estimated for each half hour settlement period using historic data for that consumer and the Profile Class for that consumer group. These estimated values are recalculated when a meter reading is subsequently obtained. However, assumptions about how the shape of energy consumption (ie how it is allocated between settlement periods) are not revisited because the data does not support this.
- For gas consumers that are not settled on a daily basis, their consumption will be estimated on the basis of the expected annual consumption[70] for the supply point

[67] In gas, suppliers will contract with a gas shipper. The role of the shipper is to purchase gas and arrange with a gas transporter for delivery across its networks to consumers.
[68] The settlements processes, and the data that support these, are integral to the charging arrangements for use of the distribution networks for physical delivery of electricity and gas to consumers.
[69] Gas supply points with an annual consumption above 58,600,000kWh and electricity supply points with a maximum demand of greater that 100kWh would fall in this category. In addition, some sites have moved voluntarily into this settlement group.
[70] The Annual Quantity (AQ) is reviewed yearly and revised for the following year to reflect any meter

and other key factors, mainly related to weather. Consumption estimates for larger supply points (LSPs) will be reconciled when a new meter reading is submitted.[71] For smaller supply points (SSPs), there is no reconciliation process to refine the quality of the estimate.[72]

4.8. The number of supply points and the volume of energy attributed to each of the market sectors described above is set out in Figure 1.

Figure 1: Energy volumes and number of supply points by sector in the gas and electricity markets, 2011

	Market sector	Supply points	Annual volume (TWh)
Gas[73]	SSP non-daily metered	22,729,000	343.9
	LSP non-daily metered	283,000	216.3
	Daily metered[74]	1,200	115.9
Electricity	Non-half hourly	29,500,000	167.5
	Half hourly	116,000	154.5

Source: Elexon[75] and Xoserve[76]

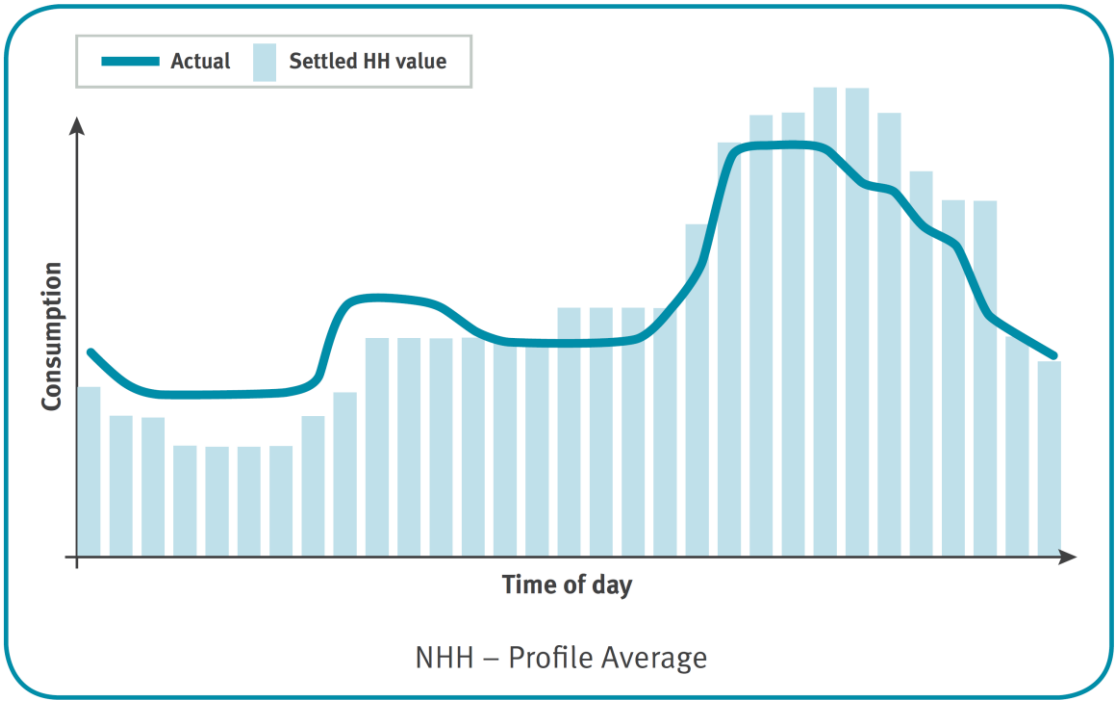
4.9. Where consumption is estimated for a settlement period, then there is likely to be a degree of inaccuracy in the allocation of charges. Figure 2 shows an illustrative example of a domestic electricity customer's actual consumption for each half hour period during a day compared to the profiled consumption used for settlement.

Impact of smart meter roll-out

4.10. Smart metering provides an opportunity to improve significantly the quality of energy settlement by using accurate, frequent and timely gas and electricity consumption data. This is likely to enable a number of important changes in the market.

readings provided.
[71] Larger supply points (LSPs) are defined as those with an AQ of more than 73,200kWh. These are mainly non-domestic sites, but some larger domestic sites are also included.
[72] Smaller supply points (SSPs) are defined as those with an AQ of less than 73,200kWh. This includes the vast majority of domestic sites (which in January 2011 we calculated to have an average consumption level of 16,500kWh). It also includes the majority of non-domestic sites.
[73] Includes customers on large gas networks and iGTs.
[74] Excludes Unique Sites which are large sites that are processed off-line because of their complexity.
[75] *Mandatory Half-Hourly Settlement for Customers in Profile Classes 1-4 and the Closure of Non Half Hourly Settlement*, Elexon, July 2011.
[76] Figures correct as of December 2011.

Figure 2: Illustrative comparison of actual and profiled consumption for a domestic single rate electricity customer



Source: Elexon

4.11. Using an actual meter reading for each settlement period should help promote competition by increasing the accuracy of cost allocation between suppliers. This would improve the link between a supplier's customer billing revenue and its energy and distribution charge liabilities. This could be particularly beneficial for smaller suppliers or new entrants, who may be more exposed to differences between billed charges and industry costs. It would also allow suppliers and consumers to be credited for changes in consumption sooner than at present. As discussed in Chapter 3, this would remove a key barrier to offering new tariffs designed to incentivise consumers to shift electricity consumption to off-peak times.

4.12. Estimating consumption dampens supplier incentives to match their energy purchases with actual consumption. Moving to imbalance charges that reflect actual consumption would incentivise suppliers to purchase energy to meet their customers' actual demand, rather than an estimate. Any resulting changes to suppliers' energy purchasing decisions may reduce the residual balancing role of the System Operator and the overall cost of balancing. In this way, more accurate settlement would encourage suppliers to manage their imbalance exposure more effectively and support more efficient use of demand-side response. The latter would give suppliers the opportunity to reduce the wholesale prices they pay for electricity by allowing them to buy more off-peak if they can shift demand away from peak times.

4.13. Use of timely meter reading data in settlement could reduce financial uncertainty for suppliers caused by the existing reconciliation process. Currently, it

may be several years before the final allocation of charges associated with a particular settlement period is reached.

4.14. Removing the existing processes for estimating consumption and allocating energy costs could also reduce industry costs. These include those costs associated with the estimation, profiling and reconciliation of consumption data.

Current market arrangements

4.15. The rules that support electricity settlement arrangements are set out in the Balancing and Settlement Code (BSC). In gas, they are set out in the Uniform Network Codes; separately for large gas transporters and Independent Gas Transporters (iGTs).[77]

4.16. An electricity supplier can elect to settle any supply point on a half-hourly basis. However, there may be disincentives to them doing so. For example, sites that move to the half-hourly market may face higher network charges. These are driven by the different distribution charging methodologies that operate for non-half-hourly and half-hourly supply points. Half-hourly sites may also face additional charges for metering services to meet the requirement to submit more frequent meter readings.

4.17. In gas, shippers can only elect to have large sites settled on a daily basis. A proposal is being developed through Xoserve's Project Nexus that would allow shippers to elect to settle any supply point on a daily basis.[78] However, as with electricity, there may be disincentives to doing this in practice. Examples include greater unpredictability of imbalance charges and more complex transportation arrangements.[79]

4.18. Industry participants have already recognised the potential for smart metering to improve the accuracy of the gas and electricity settlement arrangements. Proposals are under development to mandate half-hourly settlement for larger non-domestic electricity consumers and, more generally, to remove barriers to the elective use of actual meter reading data for settlement purposes.[80] In electricity, consideration is also being given to using smart meter data to improve the quality of profiling.[81] In gas, consideration is also being given to bringing together settlement arrangements for shippers operating on large gas transporter and iGT networks.

[77] An iGT is a company that is licensed by Ofgem to develop, operate and maintain small local gas transportation networks embedded within a Gas Distribution Network.
[78] Project Nexus seeks to reform the settlements arrangements by removing the existing reconciliation by difference process for sites with an annual consumption below 73,200kWh in favour of meter point reconciliation and by allowing any site to choose to be daily settled.
[79] All daily settled supply points are required to individually nominate the maximum offtake value at the start of the year which drives the level of transportation charges. Suppliers are penalised where this nominated figure is lower than the outturn. This is a more complex set of arrangements than for sites that are not daily settled which do not require a nominated maximum offtake value and therefore do not incur any associated penalties.
[80] A modification proposal to the Distribution Connection and Use of System Agreement (DCUSA) aims to remove barriers to the take-up of half-hourly settlement that may arise from the structure of distribution charging. The Distribution Charging Methodologies Forum is considering the enduring arrangements for distribution charges.
[81] In electricity, this work is being taken forward by the Elexon-sponsored Profiling and Settlement Review Group.

Currently, these arrangements differ and this drives additional administrative costs.[82] We welcome the work that the industry is taking forward to address these issues in the short term and on an enduring basis.

Key issues

4.19. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

4.20. A key question is whether market participants have incentives to voluntarily move to using actual meter reading data in a full or timely manner. If not, this may frustrate consumers' ability to benefit and could lead to worsening outcomes for some consumers who are settled using less accurate arrangements. In such circumstances, we would consider whether it would be appropriate to mandate appropriate settlement reforms.

4.21. If it were considered to be in consumers' interests to mandate the use of actual meter reading data in settlement arrangements, then a key question would be when to introduce such a requirement. Options include: whenever a smart meter is fitted; once a critical mass of smart meters have been fitted; or by reference to related industry reforms, such as the extension of DCC's role to include registration services. There may also be a case for phasing in moves to more accurate settlement arrangements across different consumer groups. Different segments of the market are due to complete roll-out at different times: for example, all larger non-domestic consumers should have advanced gas and electricity meters by 6 April 2014.

4.22. Consideration should be given to whether there are alternative approaches to mandating the use of actual meter readings for each settlement period that could deliver better outcomes, such as more sophisticated use of profiles. This assessment should also seek to understand the costs and benefits that individual suppliers, network operators and metering agents may incur in being required to adopt new industry requirements rather than this being a choice.

4.23. The current settlement arrangements are likely to need to be largely retained for traditional meters during the transition to smart metering. There may be scope to use the data from smart meters to improve the quality of consumption estimates, for example by improving the quality of profiling and consumption estimation. In addition, profiling and estimation for consumers with traditional meters may become less accurate over time as the population of supply points decreases. Arrangements will also be required for those supply points where daily or half-hourly meter readings are not available at certain times.

4.24. The use of actual meter reading data for settlement purposes will necessarily require access to a certain amount of consumption data. The DECC Programme is

[82] There is general scope to realise efficiencies in harmonising arrangements between iGTs and large gas transporters. The rollout of smart metering provides a catalyst to consider this potential not just for settlements but for other key market arrangements such as the change of supplier process. There is also likely to be scope for harmonisation between fuels.

considering access to, and use of, smart metering data.[83] We are discussing with DECC how data for settlement might be handled in a way that mitigates potential privacy concerns, such as through the use of aggregation. Further details on the privacy policy framework for the smart metering roll-out will be consulted on by the DECC Programme in due course.

Change of supplier process

4.25. This is the sixth of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 6: **The change of supplier process should be reliable and fast, so that customers can confidently switch supplier on a next day basis.**

Background

4.26. Consumers' right to switch their supplier lies at the heart of the competitive retail markets for gas and electricity. Once a consumer has decided to switch supplier, change of supplier is the process by which they are transferred from one supplier to another. This process is key to the consumer experience. Consumers must have confidence in the ease and reliability of the switching process for there to be a fully effective retail market.

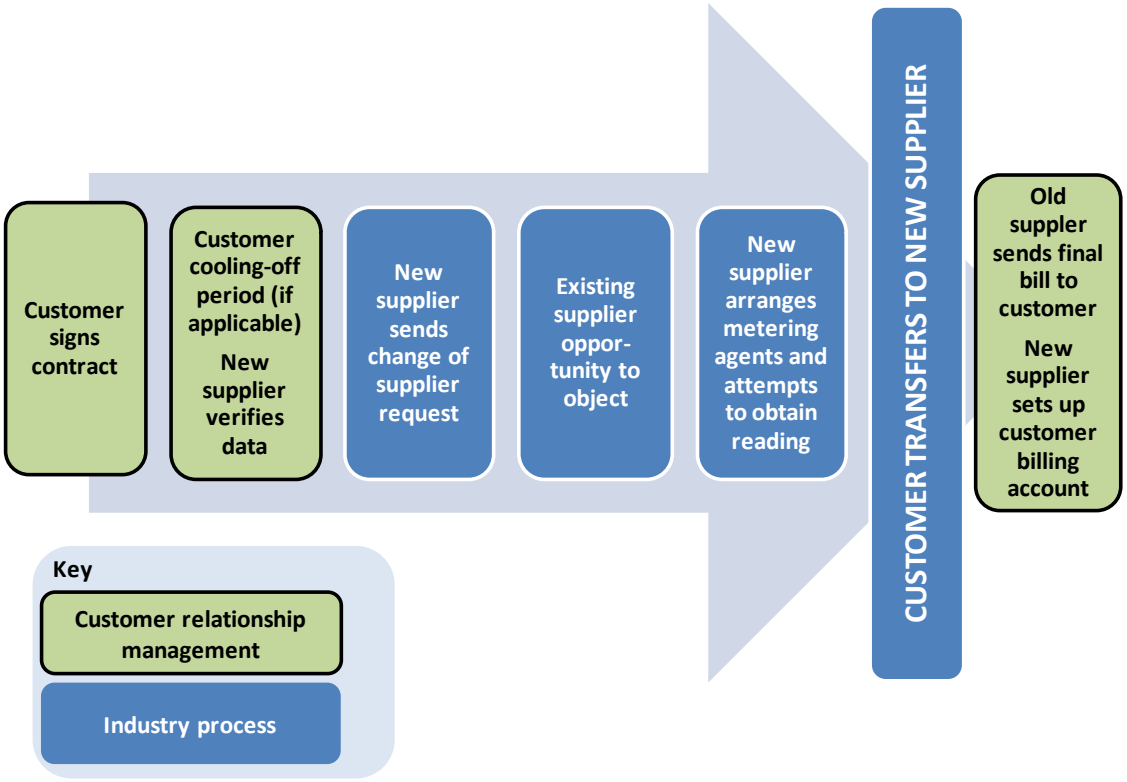
4.27. The switching processes have enabled on average around 4.7 million and 3.7 million customer transfers in electricity and gas, respectively, each year since 2003.[84] However, the complexity of the processes can lead to delays, errors and costs, which are often borne by consumers.[85] Even when it works well, this process is relatively slow. It has typically taken four to six weeks to switch supplier.[86] These factors can lead to consumer complaints and disengagement with the competitive market.

4.28. There are significant differences in the detail of how the electricity and gas processes operate, despite some similarities in their high-level design.[87] Figure 3

[83] *Smart Metering Implementation Programme: A call for evidence on data access and privacy*, DECC, August 2011.
[84] *Quarterly Energy Prices*, DECC. September 2011
[85] Such errors include: erroneous transfers, which can happen where a switch takes place without the knowledge or consent of the consumer; and billing inaccuracies, which can be caused by mistakes in taking an actual meter reading or the use of poor quality estimated meter readings where an actual is not available.
[86] This is in addition to any cooling-off period that the customer may have. The importance of a timely change of supplier process has been recognised in European legislation via the Third Package. These provisions have now been implemented in Great Britain using licence conditions (see Standard Licence Condition 14A of the gas and electricity supply licences). These place requirements on suppliers to ensure that the terms of new supply contracts allow customer transfers to take place within three weeks (after any contractual cooling-off period has ended).
[87] All suppliers are obliged to use the standard industry arrangements to transfer consumers. In both gas and electricity data must be exchanged between market participants and recorded on central registration systems. An actual or estimated meter reading is used to mark the change in responsibility between

illustrates the high-level steps in the change of supplier process. Each step involves data flows between different parties. This data is often based on estimates. These steps each take time and can increase the chances of problems occurring.

Figure 3: Summary of key stages of the change of supplier process



Impact of smart meter roll-out

4.29. The roll-out of smart metering and associated changes to industry systems provide a catalyst to both improve the speed of customer switching and to reduce the errors that cause billing disputes and erroneous transfers. DECC estimates the benefits from improved change of supplier arrangements to be up to £1.7 billion (equivalent to £3.11 per year for each smart meter from the end of the roll-out).[88]

4.30. There are two main opportunities provided by the roll-out of smart metering. First, DCC is proposed to take over central registration services, which facilitate the change of supplier process, for all gas and electricity supply points, including non-

suppliers. In both gas and electricity, the incumbent supplier may block the transfer (an objection) on prescribed grounds.

[88] *Smart meter rollout for the domestic sector (GB),* DECC, August 2011.These savings are attributed to rationalising the arrangements for handling the change of supplier process and include removing the need for trouble shooting teams to resolve exceptions or investigate data issues. In addition, the ability of suppliers to take accurate readings on the day of a change of supplier resolves the need to follow up any readings that do not match and reduces instances of incorrect billing. They also include the simplification benefits derived from DCC providing central registration, data collection, data processing and aggregation and data storage functions.

domestic consumers. This change in industry design provides scope to reconsider market arrangements and potential to streamline the change of supplier process. The change in DCC's role is anticipated to take place two to three years after DCC begins providing services. Second, improved access to data facilitated by smart metering can also deliver significant improvements against the current arrangements.

4.31. The scope for potential improvements include the following:

- Using a meter reading taken remotely from the smart meter to mark the change in responsibility between the two suppliers. This reading could be used by the new supplier to set up the billing record and by the old supplier to send an accurate final bill to the customer. It also reduces the requirement to have in place arrangements to generate an estimated opening reading.
- Using data from a smart meter to minimise the risk of erroneous transfers.[89]
- Reforming the processes for managing objections.

4.32. Fast and reliable switching can encourage competition by enabling smaller suppliers and new entrants to gain customers more quickly and at lower cost. It could also stimulate innovation, as described in Chapter 3, by enabling suppliers to market new products based on consumers being able to realise benefits faster.

4.33. There is a further opportunity to reduce costs and promote competition by addressing the differences in the gas and electricity change of supplier processes. These differences can require suppliers to operate separate systems and arrangements for gas and electricity customers and can frustrate suppliers' attempts to coordinate dual fuel customer transfers swiftly. Improving the accuracy of the change of supplier meter reading and reducing erroneous transfers will also reduce suppliers' costs in operating these, often manual, processes.

4.34. Reliable and fast switching can deliver benefits for non-domestic as well as domestic consumers. While most non-domestic consumers are on contracts with fixed end dates that constrain when a switch may occur, this is not the case in all instances. For example, non-domestic consumers that are being supplied on deemed contracts would benefit from being able to change supplier quickly and avoid paying potentially higher deemed contract rates.[90]

4.35. Making the change of supplier process fast and reliable should help increase consumer engagement in the market.[91] It would also bring energy markets into line with other sectors, such as mobile phones and banking, where consumers have come to expect that they can switch provider quickly with little effort or risk.

[89] For example, meter readings obtained from the customer could be used to verify against a remotely obtained read that the correct site is going to be transferred.
[90] Under the Gas Act 1986 and the Electricity Act 1989, a contract is deemed to be in place between the supplier responsible for that site and a customer where that customer takes a supply and has not entered into an express contract, or its previous contract with the supplier has expired.
[91] Ofgem's Energy Supply Probe found that 58 per cent of non-switchers worry that things will go wrong if they switch supplier. *Energy Supply Probe – proposed retail market remedies*, Ofgem, April 2009.

Current market arrangements

4.36. Current processes allow a period during which an incumbent supplier may object to a customer transfer of seven working days for gas and five working days for electricity. These timescales inhibit fast switching.[92] These processes would need to be redesigned or significantly shortened to enable next-day transfers. A supplier is permitted to use the objection process to prevent an erroneous transfer.[93] Fast switching would permit the resolution of an erroneous transfer more quickly by speeding up the customer's return to its original supplier.

4.37. The electricity change of supplier process is also constrained by the metering services arrangements. These constraints arise through the need to appoint and de-appoint agents on change of supplier and the subsequent time taken to agree opening/closing meter readings. Centralisation of certain metering services could reduce this constraint for customers with smart or traditional meters and we discuss this in more detail in the next section.

4.38. In gas, fast switching would also require a reassessment of the energy allocation process. This currently requires seven working days notice prior to a customer switch. It would be important to assess the benefits that could be achieved and the other impacts of a significant reduction to this timeframe.

Key issues

4.39. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

4.40. A key question will be about how quick and reliable to make the change of supplier process. In the Prospectus, the government and Ofgem set out the objective that central systems should be able to support a request for a switch to take place the following day in both gas and electricity, subject to appropriate consumer protections.[94]

4.41. Improving the transfer process in both the gas and electricity markets will involve costs, such as for changes to supplier and central systems. There may also be implications for an incumbent supplier's ability to mitigate its energy purchase and imbalance risk if it loses the right to supply a site at short notice. Consideration should also be given to the potential benefits of reform. To this end, we will seek to understand the value that consumers place on improvements.

[92] Between January 2010 and July 2011, the percentage of attempted customer transfers that are objected is 10.5% in the domestic gas market and 8.5% in non-half-hourly electricity market. Of these, 96% and 85% respectively relate to debt. The vast majority of these objections take place at the start of the objection window. In the non-domestic sector, customers and suppliers can agree contract terms that establish when a supplier may block a transfer. Source: suppliers.
[93] Around one per cent of all switches lead to an erroneous transfer.
[94] *Smart Metering Implementation Programme: Regulatory and Commercial Framework*, Ofgem, July 2010.

4.42. Another question is whether changes should be made for all consumers or just those with smart meters. It may be that improvements to the change of supplier process could be made more quickly and efficiently for those customers with smart meters. This could be the case if, for example, it avoided the need to incur high costs of system changes to accommodate consumers with traditional meters. The consumer impacts of any move towards a potential two-tier change of supplier process would need to be carefully considered.

4.43. The nature of the reforms required to deliver next-day transfers is wide ranging. There are also links to other reform areas, in particular the role of DCC in running registration services and the potential to centralise some electricity metering services. Given this, there are likely to be benefits to considering at an early stage how any changes could be efficiently implemented and to determine how they should be best sequenced with other reforms.

Data processing and aggregation

4.44. This is the seventh of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 7: **Electricity data processing and aggregation services should be procured centrally in order to reduce costs and support fast customer switching.**

Background

4.45. Electricity suppliers must appoint a data collector and a data aggregator for each of their supply points. The role of the data collector and data aggregator is to provide consumption data to the central settlement bodies so that electricity and distribution charges can be allocated.[95]

4.46. The data collector role is split into two main functions. The first is the retrieval of the meter reading (either manually or remotely) – we refer to this as the data retriever role. The second function is the processing of meter readings, including their validation and the generation of an estimate for each settlement period where an actual meter reading is not provided – we refer to this as the data processor role. The data aggregator packages consumption data provided by the data collector for a supplier's non-half-hourly supply points within a region into a single consumption value for each half hour settlement period. Half-hourly supply point data is not aggregated. The data aggregator provides the aggregated non-half-hourly value and individual half-hourly values to the central settlement bodies.

[95] There are currently 14 companies qualified as data collectors and data aggregators in the non-half-hourly market. Eight of these also perform the role of data collectors and data aggregators in the half-hourly market. There are no companies that are solely half-hourly data collectors. Of the 14 companies, five are linked to large suppliers. Smaller suppliers all procure these services from third parties. Source: Elexon.

4.47. On change of supplier, the new supplier must appoint metering services agents (including a data collector and data aggregator) for that supply point. The new supplier must also de-appoint the current agents. The de-appointed agents are required to provide information to the new agents to facilitate their functions.

Impact of smart meter roll-out

4.48. The government has decided that DCC will provide a centralised data retrieval service for smart meters in the domestic sector. DCC must also offer terms to suppliers in the smaller non-domestic sector, who can then opt to use this service.[96] DCC may also decide to offer terms for suppliers in the larger non-domestic sector. DCC is expected to begin providing services from 2014.

4.49. The creation of DCC, as a body designed to procure central services, including some existing data collector functions, provides a catalyst for considering reform of the data processor and data aggregator arrangements. The government has noted the potential, at a later stage, for DCC to include the functions of electricity data processing and aggregation.[97] Initial analysis undertaken by the DECC Programme indicated that there may be significant potential benefit from this additional centralisation.[98]

4.50. Centrally procuring data processor and data aggregator services could realise efficiencies, both in terms of reduced costs and complexity. Some of these services, such as the non-half-hourly data aggregator, appear to be being undertaken in a very similar way.[99] Half-hourly data aggregators must develop or procure bespoke software, but arguably are required to undertake less complex tasks than for the non-half-hourly market.

4.51. Centralising data processing and data aggregation, and avoiding the need to appoint and de-appoint these metering services agents could also support fast customer switching by removing the cost, time and risks involved with the flow of data between such agents.[100] In particular, this could facilitate:

- Faster validation of any actual change of supplier meter reading obtained[101]
- Faster provision of an estimated change of supplier metering reading where a supplier was not able to obtain an acceptable actual meter reading.

[96] *Smart Metering Implementation Programme: Communications Business Model*, Ofgem, July 2010.
[97] *Response to Prospectus Consultation: Overview Document*, Ofgem/DECC, March 2011.
[98] In gas, data processing services are already performed centrally by Xoserve on behalf of the large gas transporters (there are different arrangements for independent gas transporters). There is no direct equivalent to data aggregation in the gas market.
[99] For example, we understand that all existing non-half-hourly data aggregators use the same software, which is provided by Elexon.
[100] For example, the old data collector is required to provide the new data collector with historic consumption data which would allow the new data collector to validate any actual meter readings obtained or generate an estimated change of supplier meter reading.
[101] Suppliers may attempt to use an actual meter reading to mark the change of supplier as this allows the new supplier to start its relationship with the customer on the right footing and reduces the costs and uncertainty of dealing with any subsequent billing disputes.

4.52. Centralising data processor and data aggregator services could also deliver quicker customer transfers for non-domestic suppliers, irrespective of whether they chose to use DCC for data retrieval services. Where a non-domestic supplier appoints a separate data retriever, any change of supplier meter reading could be sent to the centralised data processor. Alternatively, the data processor could generate an estimated change of supplier meter reading.

Current market arrangements

4.53. The obligation on electricity suppliers to appoint a data collector and a data aggregator for each of their supply points is set out in the BSC. Compliance with the BSC is a supply licence requirement. DCC functions, including those associated with data retrieval, will be set out in the Smart Energy Code (SEC). The SEC will provide arrangements for the introduction and ongoing operation of smart metering. Compliance with the SEC is also expected to be a licence requirement.

4.54. Centralising the procurement of data processing and data aggregation services would require modification to the current regulatory arrangements. These potentially include the BSC, SEC and DCC licence conditions. Managing changes across these regulatory instruments could require some central coordination.

Key issues

4.55. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

4.56. Centralising the data processor and data aggregator functions would have impacts on competition in the metering services market and related markets, such as for energy services. In addition, there may be impacts for non-domestic data retrieval services as the size of the overall contestable market diminishes in line with the smart meter roll-out.

4.57. Centralised data processor and data aggregator services need not be procured by DCC. Other parties, such as Elexon, could theoretically undertake this function (in the way that Xoserve performs a similar role in gas).[102] Such parties may be able to take this on sooner than DCC. This would need to be considered against the benefits of using DCC as a vehicle for central procurement.

4.58. Consideration should be given to which segments of the market any centralisation of data processing and data aggregating services would be most appropriate. This could just apply to the domestic market, or include all or part of the non-domestic market. As noted earlier, the scope of any changes would have implications for any reforms to the change of supplier process.

[102] In this instance, Elexon would be linking together the processing of meter readings and settlement, as currently occurs in the gas market.

4.59. The timing of any changes would be considered in good time to help ensure that any changes could be implemented and sequenced with other reforms in the most efficient manner. For example, it may be appropriate to make changes when DCC takes over registration or to coincide with any associated changes to systems and processes to improve the change of supplier and settlement arrangements.

4.60. Data privacy and security issues would also need to be considered. Some parties have expressed concerns that the impact of any security breach would be higher if data for all consumers was held by a single operator. We note that similar arrangements already operate in gas, albeit there is significantly less data to be processed in gas than there is likely to be in electricity.

Code consolidation

4.61. This is the eighth of eight areas identified that could materially influence the effective development of smarter markets from the platform of smart metering. The discussion below is focused on the following proposition:

Proposition 8: **The Smart Energy Code should be used as a vehicle to consolidate existing industry codes dealing with retail issues in gas and electricity to facilitate market development and reduce administrative burdens.**

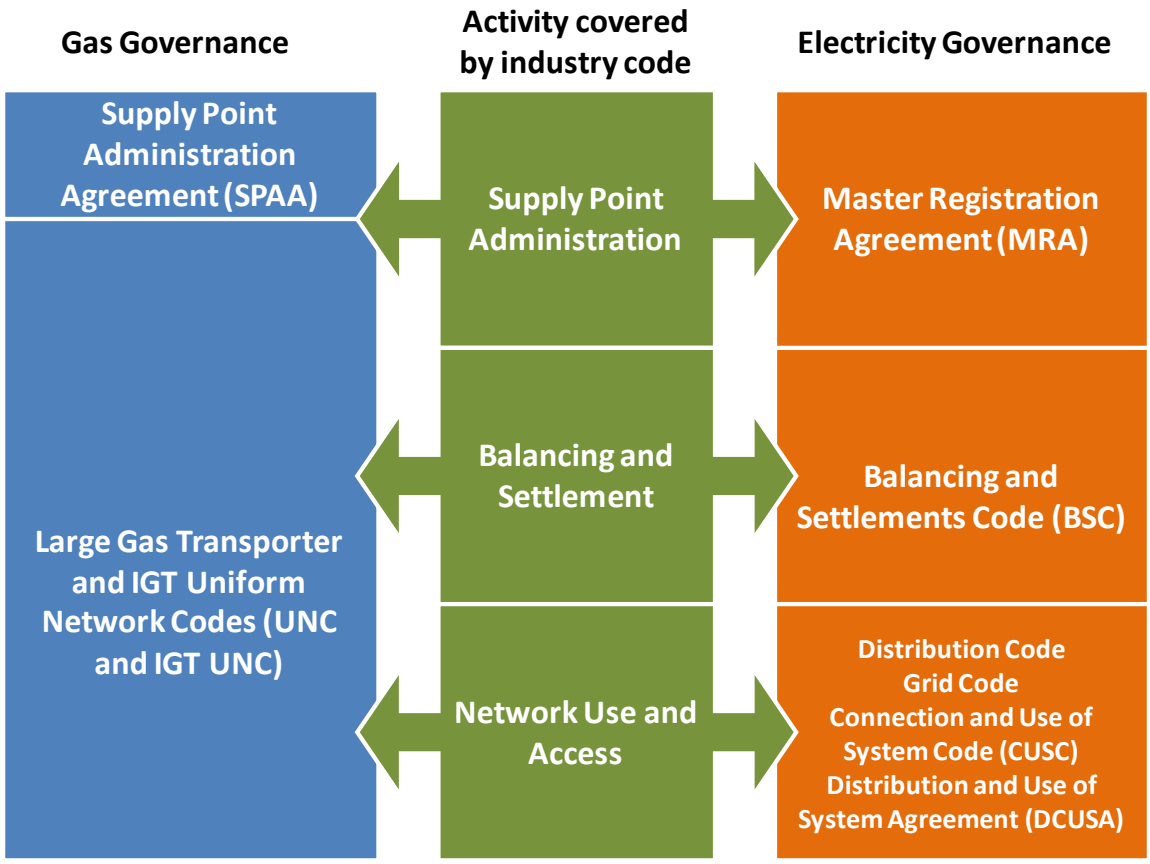
Background

4.62. There are nine main industry codes in total that gas and electricity suppliers (and shippers in the gas market) must comply with as a condition of their licences. These set out the detailed rules that support the operation of the market. The current industry codes that suppliers (and gas shippers) must comply with, and the activity area covered is summarised in Figure 4.

4.63. While there are some similarities in how each code is managed, there are differences in accreditation, governance and change control. Some differences were removed following our Code Governance Review.

4.64. Each code sets out market entry arrangements to ensure an industry party is ready to operate under its governance. This can range from the code administrator simply providing the requisite information to the acceding company, to performing a set of rigorous tests.

Figure 4: Summary of current industry codes



Impact of smart meter roll-out

4.65. The government has concluded that the framework for delivering the roll-out of smart metering should involve the establishment of a new industry code: the SEC. This should include detailing the relationships between DCC and users of its services around the new data and communications activities. The aim will be to manage the smart metering arrangements in a consistent and holistic manner across the gas and electricity sectors.[103]

4.66. The Code Governance Review acknowledged the fragmentation of existing industry codes but concluded that it was not cost-effective to institute a change at that time. The SEC is the first cross-fuel code.[104] Its development provides an opportunity to rationalise the scope and role of the existing codes and agreements where this would bring benefits.

[103] The SEC will be implemented by DECC through licence obligations on DCC to adopt the SEC, which will be attached to its licence. DCC, suppliers, network operators and other uses of DCC's services will be obliged to comply with the SEC.
[104] *Response to Prospectus Consultation: Central Communications and Data Management*, Ofgem/DECC, March 2011.

4.67. Code consolidation could deliver benefits, in particular for smaller suppliers and new entrants. These include less fragmented change control and governance arrangements and greater consistency between the gas and electricity markets.[105] This would be expected to reduce administrative burdens and increase supplier engagement in the evolution of codes.[106]

4.68. Code administrators have made improvements to market entry arrangements in recent years.[107] Consolidation of industry codes would provide an opportunity to make further improvements by bringing together and rationalising these arrangements.

4.69. There may be particular benefits for the SEC to cover industry retail arrangements, including those relating to metering, registration activities and change of supplier. These are currently dealt with by the Supply Point Administration Agreement (SPAA)[108] in gas and Master Registration Agreement (MRA)[109] in electricity. Other possibilities include the metering codes of practice[110] under the BSC and the registration and change of supplier rules that are currently managed through the Uniform Network Code (UNC) and the iGT UNC.[111]

Current market arrangements

4.70. Existing industry code governance arrangements manage change against defined objectives set out in licence conditions. They are not well placed to consider consolidation and any rationalisation with other existing industry codes. Ofgem would therefore have a key role in agreeing changes to existing industry codes and making changes to licence conditions to facilitate any potential benefits in this area. In particular, our Significant Code Review powers may be appropriate here in facilitating change across a number of industry codes.

[105] Each code has a panel that typically meets monthly to discuss modification proposals, industry performance and other issues. During October 2011, there were over 60 industry meetings, including panel discussions associated with modification proposals. This represents a typical workload across the industry and excludes meetings to discuss smart metering roll-out.
[106] Ofgem is required to have regard to the principles of best regulatory practice and we have a duty in relation to removing unnecessary burdens.
[107] For example, the Master Registration Agreement and BSC now work together to ensure a cohesive entry process in electricity. Xoserve is also proactive in helping and advising new entrants in gas. Ofgem and code administrators have also put together guidance for prospective new entrants on the organisations they need to contact and the tasks involved.
[108] The SPAA is a multi-party agreement between domestic gas suppliers and gas transporters. It sets out the inter-operational arrangements between gas suppliers and transporters in the retail market.
[109] The MRA is a multi-party agreement between all licensed electricity distributors and suppliers. It sets out terms for the provision of supply point registration services and procedures in relation to the change of supplier.
[110] These codes of practice detail the technical requirements for electricity metering systems.
[111] The UNC and iGT UNC are prepared by large gas transporters and iGTs respectively. They set out the arrangements for access and use of the gas networks, balancing and settlement and supply point administration in the gas market. Shippers and transporters must comply with these requirements.

Key issues

4.71. Based on our preliminary analysis, we have identified a range of issues that warrant consideration as part of any further work in this area. These are discussed below.

4.72. A key question would be when to consolidate existing industry codes. The DECC Programme proposes to introduce the SEC in time to support the roll-out of smart meters. Initially, the plan is that the SEC will focus on authorised parties' access to smart metering data. Two to three years after DCC becomes operational, it is proposed that the SEC will also govern the central registration arrangements. This could be an appropriate opportunity to consolidate the MRA, SPAA and elements of other industry codes into the SEC. It would seem to make sense to consider how best to rationalise market entry arrangements at the same time as consolidation happens.

4.73. A move to consolidate industry codes would necessarily require assessment of the appropriate governance arrangements. Given the potential to consolidate around the SEC, it would be helpful to consider this when establishing its governance arrangements. We will engage with the DECC Programme as they take forward development of the SEC. In doing so, we will consider the objectives of the code and the potential for consumer representation in its governance arrangements, drawing on the conclusions of Ofgem's Code Governance Review where appropriate.

4.74. The SEC will provide a vehicle for consolidation of industry codes covering gas and electricity retail arrangements. The MRA, SPAA and elements of the BSC on metering codes and UNC on registration and change of supplier are candidates for consolidation with SEC. We welcome views on whether any additional industry codes or aspects of those codes should be included within the scope of any further consideration.

4.75. During the roll-out, legacy arrangements will need to be maintained to facilitate operation of traditional metering. The ease with which these legacy arrangements can be included within any code consolidation should be considered.

Questions for consultation

4.76. In this chapter, we have identified areas where changes to existing market processes are enabled or required by the roll-out of smart metering. These changes can both improve efficiency in the way that the industry arrangements support the competitive market and help to create appropriate conditions for the development of smarter energy markets.

4.77. We welcome views on whether we have identified the main areas of potential improvement to market processes. For each area identified, we welcome views on whether our propositions hold and whether we have highlighted the key issues for consideration in developing a strategy for shaping market development. The full list of consultation questions can be found in Appendix 2.

5. Conclusions and next steps

5.1. The roll-out of smart metering to all domestic and non-domestic consumers is due to be effectively completed by the end of the decade. It has the potential to enable wide-ranging developments in the energy markets. These changes could unlock significant value for consumers. In addition to the £19 billion of industry cost savings and energy savings identified by government, the platform of smart metering can help deliver wider benefits by promoting competition in energy supply and related markets, supporting the development of a smarter grid and improving security of supply.

5.2. It is our contention that, without reform to existing market arrangements, in particular underlying market processes, the potential for market development will be constrained. Furthermore, there needs to be a step change in consumer engagement with the retail energy market in order for consumers to be able to benefit fully from the roll-out of smart metering and the new products and services that are likely to emerge. A rigorous focus on consumers' interests will be needed to avoid the risk of entrenching many of the current issues around consumer engagement and to protect those that cannot engage effectively. We will therefore look to build on the reforms proposed under our Retail Market Review to promote effective competition.

5.3. To fully harness the potential of smart metering and make the transition to smarter markets, it will be important to consider potential reforms in the round, identifying linkages across the supply chain and with other Ofgem, government and industry initiatives. To manage this change in a coordinated and coherent way, we consider it appropriate for Ofgem to develop a strategy for shaping market development.

5.4. This consultation is designed to help scope a programme of work to contribute to building smarter markets from the platform of smart metering. In the light of responses to this consultation, we intend to publish our strategy in the summer of 2012. This will set out the initial scope of reform areas for consideration and how this work will be phased over time. We would subsequently aim to consult on the nature of any proposed reforms as well as when and how best to implement them.

5.5. As our work moves forward, we are committed to continuing and extending our engagement with stakeholders. We are keen involve a wide range of industry, consumer and other stakeholders. We intend to hold a briefing event on this strategy consultation early in 2012. If you would like to attend, please contact us at smartermarkets@ofgem.gov.uk.

Appendices

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Appendix 1 – Consultation response and questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below. In many cases, these questions relate to propositions which we have developed for each potential reform area. As a result, we have also copied these propositions below.

1.3. Responses should be received by **7 March 2012** and should be sent to:

Harpal Bansal
Smarter Markets
Ofgem
9 Millbank
London
SW1P 3GE
smartermarkets@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document(s) to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Any questions on this document should, in the first instance, be directed to:

Adhir Ramdarshan
Smarter Markets
Ofgem
9 Millbank
London
SW1P 3GE
smartermarkets@ofgem.gov.uk

CHAPTER: Three

Proposition 1: Time-of-use tariffs should help many consumers lower their energy costs, but improved engagement will be needed to help all consumers make informed choices.

Proposition 2: More efficient use of demand-side response can lower overall energy costs, but this will need coordinated changes to regulatory and commercial arrangements.

Proposition 3: Innovation in energy services would increase the consumer benefits of smart metering and can happen without major change to the regulatory framework.

Proposition 4: Consumers will have more payment options, without changes to regulatory arrangements beyond those envisaged as part of the smart metering roll-out.

Question 1: Do you agree with the propositions set out in this chapter?

Question 2: For each proposition, have we identified the elements of current market arrangements that could help or constrain the realisation of benefits for consumers?

Question 3: For each proposition, have we identified the key issues, such as the timescales for any changes to market arrangements?

Question 4: Are there additional opportunities for development in retail energy markets that we should include in the scope of our work?

CHAPTER: Four

Proposition 5: Settlement arrangements should use actual daily (gas) and half-hourly (electricity) meter reading data in order to improve their accuracy and efficiency.

Proposition 6: The change of supplier process should be reliable and fast, so that customers can confidently switch supplier on a next day basis.

Proposition 7: Electricity data processing and aggregation services should be procured centrally in order to reduce costs and support fast customer switching.

Proposition 8: The Smart Energy Code should be used as a vehicle to consolidate existing industry codes dealing with retail issues in gas and electricity to facilitate market development and reduce administrative burdens.

Question 5: Do you agree with the propositions set out in this chapter?

Question 6: For each proposition, have we identified the right sources of costs and benefits associated with achieving them?

Question 7: For each proposition, have we identified the key issues, such as the timescales for any changes to market arrangements?

Question 8: Are there additional opportunities to reform market processes that we should include in the scope of our work?

Appendix 2 – The smart metering roll-out

1.1. The implementation of smart metering will be one of the largest and most complex changes undertaken by the energy industry. It will entail the almost complete renewal of the stock of electricity and gas meters for domestic and smaller non-domestic consumers by 2019. Approximately 53 million meters will need to be replaced, involving visits to over 30 million households and businesses.

1.2. The government has made a number of key decisions about how smart metering will be implemented in Great Britain. Energy suppliers will be required to install smart meters that meet a defined set of functional requirements. The required high-level functionality of the system is set out in Figure 5.

Figure 5: High-level functions of the smart metering system

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

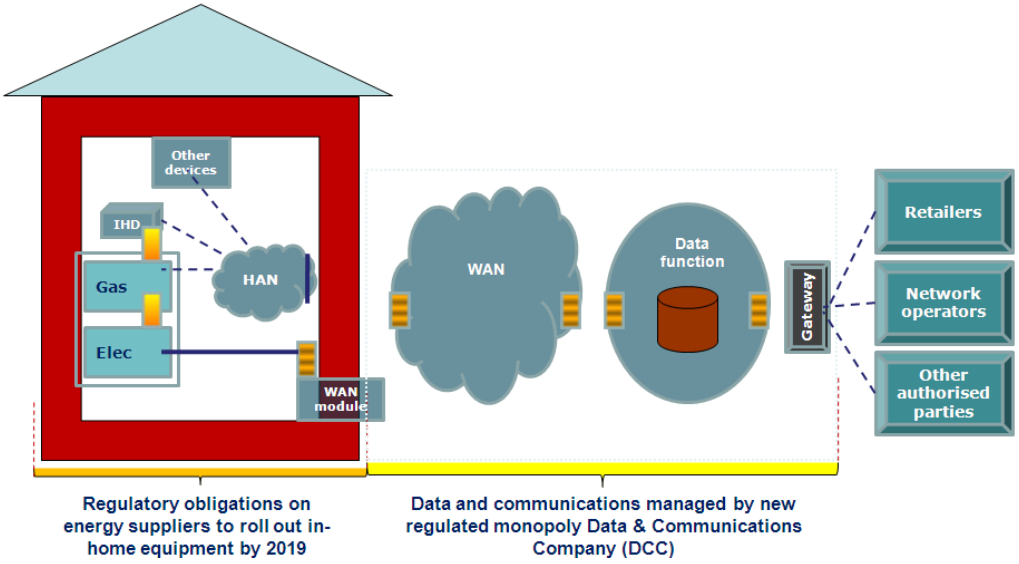
1.3. Building on these functional requirements, government will mandate technical specifications, based on open, non-proprietary standards. These will provide for the interoperability of all metering equipment such that equipment at customer premises does not need to change with a change of supplier.[112]

1.4. A new central function will be introduced to manage the two-way communication of data between smart meters and authorised parties, such as suppliers. Responsibility for procuring these communications and data services will lie with a new licensed monopoly, the Data and Communications Company (DCC). This approach aims to protect consumers by supporting interoperability, providing substantial economies of scale, enabling comprehensive security arrangements and supporting the development of smart grids and energy services.

1.5. Figure 6 illustrates the key features of the smart metering design.[113] The equipment in domestic premises will include:

- Gas and electricity smart meters
- An in-home display that provides information on a consumer's energy usage
- A Wide Area Network (WAN) module to provide for two-way communication between smart meters and DCC
- A Home Area Network (HAN) to link the gas and electricity smart meters, IHD, the WAN module and other smart devices within the premises.

Figure 6: Key features of the smart metering design



[112] Interoperability is the ability for different components of the smart metering system to exchange data and work together independent of manufacturer.
[113] *Smart Metering Implementation Programme: Response to Prospectus Consultation,* Ofgem/DECC, March 2011.

Appendix 3 - Glossary

A

Annual Quantity (AQ)

The quantity of gas estimated to be offtaken at a supply meter point during a period of one year.

B

Balancing and Settlement Code (BSC)

The BSC contains the governance arrangements for electricity balancing and settlement in Great Britain. See also Codes.

C

Code Governance Review

Ofgem's review of the industry codes governance arrangements. We launched the review to ensure that these arrangements remained fit for purpose given the wide range of changes that had occurred since the introduction of the codes and the scale of the challenges facing the energy industry over the coming decade. Our final proposals were published in March 2010. See also Codes.

Codes

The industry codes are the regulated contractual arrangements that govern the electricity and gas wholesale and retail markets. They also define aspects of the terms under which industry participants can access the electricity and gas networks. The electricity codes include the Balancing and Settlement Code, the Master Registration Agreement and the Distribution Connection and Use of System Agreement. The gas codes include the Uniform Network Code and the Supply Point Administration Agreement.

D

Data aggregator

The party appointed by an electricity supplier to package non-half-hourly consumption data into a single value for all of the supplier's supply points within a region for each settlement period, to meet the requirements set out in the Balancing and Settlement Code.

Data collector

The party appointed by an electricity supplier to retrieve and process meter readings to meet the requirements set out in the Balancing and Settlement Code. Where an actual meter read is not available, the Data collector is responsible for generating an estimate for each settlement period.

Data and Communications Company (DCC)

The new central entity that will be created and licensed to manage the procurement and contract management of smart metering data and communications services.

Department of Energy and Climate Change (DECC)

Government department responsible for energy policy and climate change mitigation policy.

Direct debit

A method of payment where a fixed or variable amount is taken from a bank account each month, quarter or year.

Distribution charges

The charges paid by electricity suppliers to network operators for use of the electricity or gas distribution system.

Distribution Connection and Use of System Agreement (DCUSA)

A multi-party contract between the licensed electricity distributors, suppliers and generators which relates to the connection to and use of the distribution networks. See also Codes.

Distribution system

A local network that connects electricity/gas from the transmission system to end consumers at lower voltage/lower pressure.

Dual fuel

A type of energy contract where a customer takes gas and electricity from the same supplier.

E

Elexon

The organisation responsible for managing the Balancing and Settlement Code.

Energy supplier

A company licensed by Ofgem to sell energy to and bill customers in Great Britain.

Erroneous transfer

A change of supplier that occurs without the knowledge or consent of the customer concerned.

G

Gas Distribution Network

A network that transports gas at lower pressures from the transmission system to homes and businesses of gas customers or to the point of connection with an Independent Gas Transporter pipeline system.

Gas shipper

A company that is licensed by Ofgem to arrange with a Gas Transporter for gas to be introduced into, conveyed through, or taken out of a pipeline system operated by that Gas Transporter.

Gas Transporter

A company that is licensed by Ofgem to convey gas through its pipes to premises, or to another system of pipelines operated by another Gas Transporter.

Green Deal

Government initiative to establish a framework that will enable companies to offer consumers energy efficiency improvements at no upfront cost and to recoup payments through a charge in instalments on the energy bill.

I

Independent Gas Transporter (iGT)

A company that is licensed by Ofgem to develop, operate and maintain small local gas transportation networks embedded within a Gas Distribution Network.

In-home display

A device capable of displaying near real-time information on energy consumption in a readily accessible form. Government is mandating that all domestic consumers should be offered an in-home display as part of the roll-out of smart metering.

L

Low Carbon Networks (LCN) Fund

Ofgem established the £500 million LCN Fund to encourage electricity distribution network operators to trial innovative solutions that will help them meet the changing requirements of generators and consumers at value for money as we move to a low carbon economy.

M

Metering services

Metering services include installation, provision, and maintenance of both electricity and gas meters. In electricity, metering services also refers to the retrieval, processing and aggregation of consumption data.

N

Network operators

The companies that are licensed by Ofgem to maintain and manage the electricity and gas transmission and distribution networks in Great Britain.

O

Ofgem

The Office of Gas and Electricity Markets (Ofgem) is responsible for protecting gas and electricity consumers in Great Britain. It does this by promoting competition, wherever appropriate, and regulating the monopoly companies that run the gas and electricity networks. Ofgem is governed by the Gas and Electricity Markets Authority.

P

Prepayment

A method of paying for energy, whereby consumers pay in advance for the energy they consume.

Prepayment Meter Infrastructure Provision (PPMIP)

A system for reconciling back to the relevant energy supplier the advance payments made by prepayment customers at outlets, such as corner shops or post offices.

R

Registration

The process for recording which energy supplier is responsible for supplying energy to each metering point.

Retail Market Review

Ofgem's project launched in November 2010 to enhance competition in the retail energy markets and make it work more effectively so that the benefits can be realised by more consumers than at present.

S

Settlement

The settlement processes reconcile the metered positions of generators and suppliers (in electricity) and shippers (in gas) against the volume of energy they have contracted to flow onto or take off the network.

Settlement period

The period over which metered and contracted volumes are reconciled. The settlement period in gas is daily while in electricity it is every half hour. See also settlement.

Short-Term Operating Reserve

A service procured by the System Operator, whereby the provider delivers a contracted level of power when instructed, within pre-agreed parameters.

Smart Energy Code (SEC)

A new industry code that will govern the arrangements for the introduction and ongoing operation of smart metering. Among other things, the Code will detail the relationships between the Data and Communications Company and the users of its services.

Smart Metering Implementation Programme ("the DECC Programme")

The central change programme established by government to develop and implement the regulatory framework for the roll-out of smart metering.

Spring Package

A package of measures put forward by Ofgem in February 2011 to help ensure consumer interests remain protected in response to early moves by suppliers to start installing meters with smart functionality before the regulatory framework for the roll-out is in place. Protections around remote switching to prepayment and remote disconnection for domestic consumers were implemented in October 2011.

System Operator

The entity charged with operating either the electricity or gas transmission system in Great Britain. National Grid Electricity Transmission is the System Operator of the high-voltage electricity transmission system. National Grid Gas is the System Operator of the high-pressure gas transmission system.

T

Time-of-use tariffs

Energy tariffs that charge different prices at different times of the day, week, month or year.

Traditional meter

A meter for registering the consumption of gas volume or electrical energy that does not have any advance or smart metering functionality as prescribed by government. This refers to both credit and prepayment meter types.

U

Uniform Network Code (UNC)

Industry Code operated by large Gas Transporters that determines the arrangements for shippers to input and exit gas from their network. It governs processes such as the balancing of the gas system, network planning, and the allocation of network capacity. Independent Gas Transporters have their own network code, the Independent Gas Transporters Uniform Network Code (iGT UNC). See also Codes.

W

Wide Area Network (WAN)

The network that will be used for two-way communication between the central systems of the Data and Communications Company and the smart metering system in the consumer premise.

X

Xoserve

The agent of the larger Gas Transporters responsible for supplying a range of central services that allow the gas industry to operate.

Appendix 4 - Feedback Questionnaire

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

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Do you have any further comments?

1.2. Please send your comments to:

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9 Millbank
London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk