



Department for
Business, Energy
& Industrial Strategy

SMART METERING IMPLEMENTATION PROGRAMME

A report on progress of the realisation of
smart meter consumer benefits

September 2019



OGL

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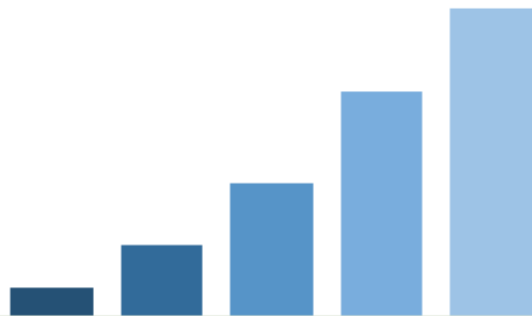
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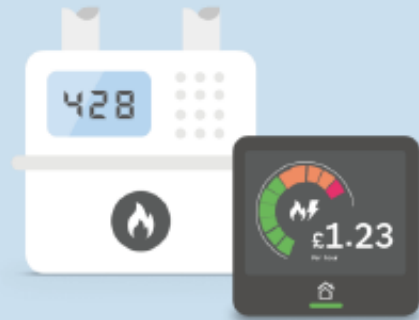
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14.9 million



smart and advanced **meters operating** in smart mode in homes and small businesses across Great Britain*

*at end of June 2019



3/4 of people with smart meters have taken steps to **reduce** their energy use

£8.8 million

made available by Government to **drive smart meter innovation** in schools, retail and hospitality sectors



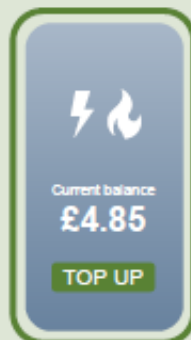
over **200,000** **safety notices** issued, alerting customers to pre-existing unsafe household appliances*



170,000

pre-existing network-related **safety issues** identified and reported to networks to resolve*

*relates to all meter installations in 2018



9 in 10

customers with smart prepayment meters say that **topping up is easier**

£11 million

made available through two competitions to explore how smart meter data can support innovation in **domestic energy efficiency**



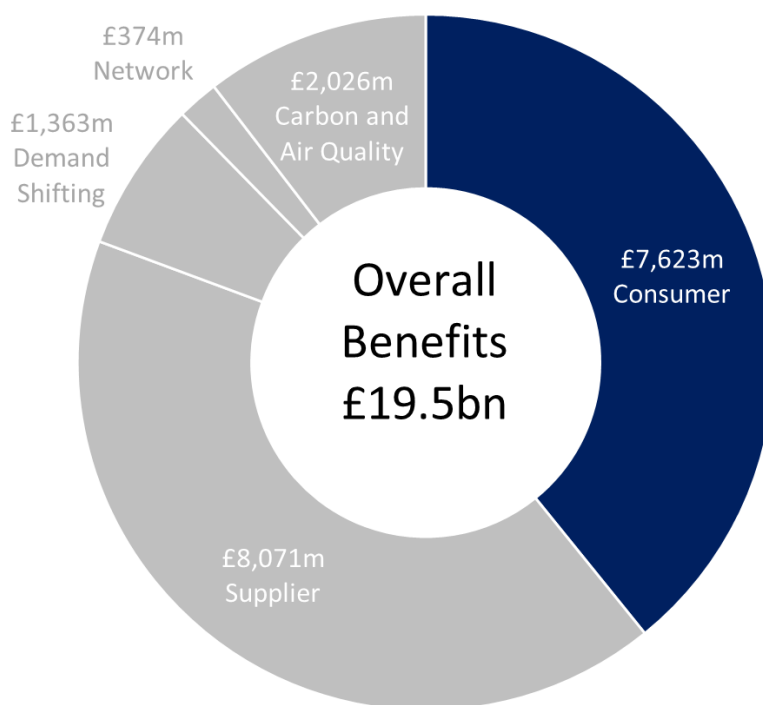
Executive Summary

Approach to consumer benefits

This document is a progress report on how the consumer benefits anticipated for the Smart Metering Implementation Programme (“the Programme”) are being realised. It also sets out the plans in place to ensure their ongoing delivery.

The national roll-out of smart metering is central to the delivery of a smart energy system delivering secure, cheap and clean energy. It also provides a range of direct benefits to consumers. These benefits are the subject of this report, which fulfils a Government commitment made during the passage of the 2018 Smart Meters Act.

Such consumer benefits include those which have been valued as part of the £7.6 billion consumer benefits projected in the 2019 Cost Benefit Analysis¹ and a range of non-valued benefits, such as improved consumer experience.



The Programme is led by The Department of Business, Energy and Industrial Strategy (BEIS), delivered by energy suppliers and regulated by Ofgem. BEIS has established a policy framework for engaging consumers and ensuring consumer benefits are realised. This includes a range of activities delivered by suppliers including: the offer of an In-Home Display

¹ BEIS, Smart Metering Implementation Programme Cost Benefit Analysis (BEIS, 2019): <https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

(IHD), provision of advice on energy efficiency and a national campaign led by Smart Energy GB.

As part of its responsibilities for the Programme, BEIS monitors and reviews all benefits on an ongoing basis. It does this using its own research, as well as evidence from consumer bodies, Ofgem, energy suppliers and the National Audit Office (NAO).

Consumer benefits are linked directly with installations. The report (and this summary) therefore starts with an overview of roll-out progress. It then considers benefits relating to energy consumption reduction, prepayment and engagement in the energy market. This is followed by consumer protection measures put in place as part of the Programme; and finally, a look at distribution and consumer safety benefits, as well as the potential benefits for consumers from innovation that smart meters can unlock.

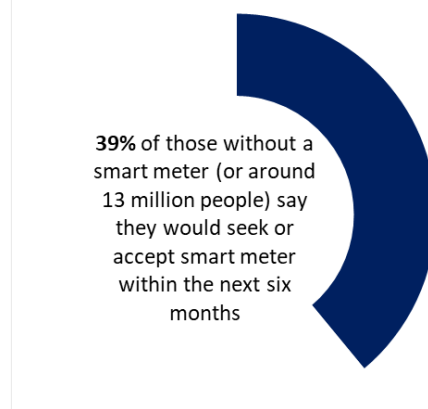
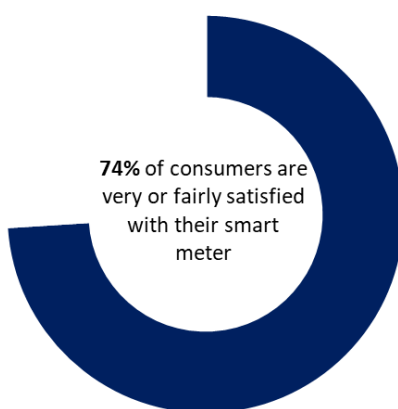
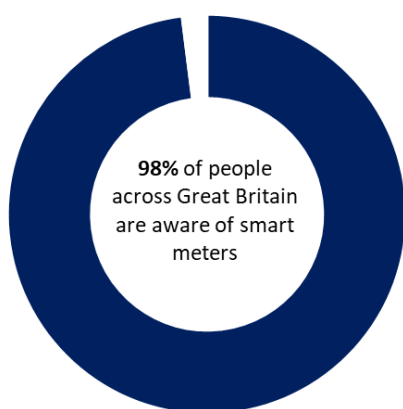
Roll-out progress

Smart meters bring practical benefits to households and small businesses right from installation. Smart Energy GB's national engagement campaign has focused on ensuring that households and microbusinesses understand these benefits and on generating consumer demand. It is supported by partnerships with local, regional and national organisations.

These activities, combined with energy suppliers' communication to their own customers and word-of-mouth based on consumers' own experiences, have driven very high levels of awareness and significant demand for smart metering.

Key evidence

- as of June 2019, there are around 14.9 million smart and advanced meters operating in Great Britain representing over a quarter of all domestic meters and over a third of all non-domestic meters.²



² BEIS, Statistical release and data: Smart Meters, Great Britain, Quarter 2 2019 (BEIS, 2019): <https://www.gov.uk/government/statistics/statistical-release-and-data-smart-meters-great-britain-quarter-2-2019>

Future direction

The smart meter programme remains on track to offer smart meters to every home and small business by the end of 2020. Government is considering the policy landscape beyond the end of the current energy supplier obligation, and what may be needed to support a market-wide roll out of smart meters. Government has, in parallel with this report, published a consultation on proposals for a regulatory framework for smart meters beyond the end of 2020.

BEIS also recently published a decision to make it Smart Energy GB's responsibility to run a specific awareness raising campaign tailored to microbusinesses starting in 2020.

Energy consumption reduction

Helping consumers use smart metering to manage their energy consumption is a major objective of the Programme and a contributor to its overall projected benefits.

Four levers (direct and indirect feedback on energy consumption, advice and guidance, and motivational campaigns) have been deployed to support a change in consumer behaviour. Monitoring and research by BEIS and other organisations shows that this is being done through increased awareness, knowledge and incentives which encourage energy saving.

To help energy suppliers deliver tailored energy efficiency advice, BEIS also commissioned a toolkit, which has been utilised by a number of suppliers.

In the longer term, we expect that the change in availability of energy consumption data will lead to innovation in new products and services that will help consumers manage their consumption and some suppliers are now offering apps and customised home energy reports. We have reviewed evidence as to whether such products and services might replace the existing IHD requirement. However, in recent trials of IHD alternatives by suppliers, they did not perform overall as well as IHDs.³

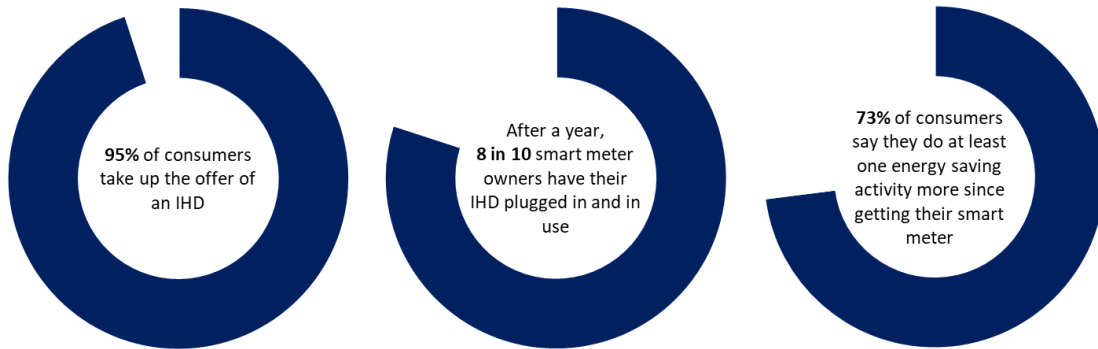
In the non-domestic sector, BEIS research has shown that, while larger organisations are able to use energy data to reduce consumption, smaller organisations are likely to need a more tailored approach to help them save energy, in the form of products that simplify interpretation of data and "push" alerts or recommendations to users.

Key evidence

- The 2019 Cost Benefit Analysis projects £4.7 billion of energy reduction benefits to domestic consumers and £1.5 billion to non-domestic consumers to 2034, based on estimated demand reductions of:
 - 3.0% for domestic electricity;
 - 2.2% for domestic gas credit and 0.5% for prepay gas; and

³ Behavioural Insights Team, Impacts of Alternatives to In-Home Displays on customers' energy consumption (BEIS, September 2019): <https://www.gov.uk/government/publications/smart-meters-derogation-guidance-supporting-energy-supplier-applications-for-trials-of-in-home-display-alternatives>

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- 4.5% gas and 2.8% electricity for non-domestic consumers.
 - Trials, research and evaluations have provided a range of evidence that the projected domestic savings are achievable; and that higher savings are achievable via high quality and innovative approaches;



- BEIS has funded two large-scale innovation competitions; the £8.8 million Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC) and the £6.25 million Smart Energy Savings (SENS) Competition to develop, pilot and evaluate the energy consumption impacts of innovative smart energy management products and services. NDSEMIC targets three priority non-domestic sectors (hospitality, retail and schools) and SENS targets domestic users.

Future direction

Given the evidence supporting the effectiveness of the existing policy framework, BEIS intends to maintain its requirements, including the IHD mandate. Suppliers are able to enhance their offerings should they wish to do so.

As noted in the NAO 2018 report, Ofgem is engaging with suppliers to improve consistency in their provision of energy saving advice. BEIS will continue to monitor progress and work with energy suppliers to improve the quality of energy saving advice provided by meter installers.

NDSEMIC will conclude in 2020 and has the longer-term objective of driving a market for tailored energy management products for smaller organisations, reflecting a broader sector-based policy approach and recognising evidence that smaller non-domestic sites require tailored solutions.

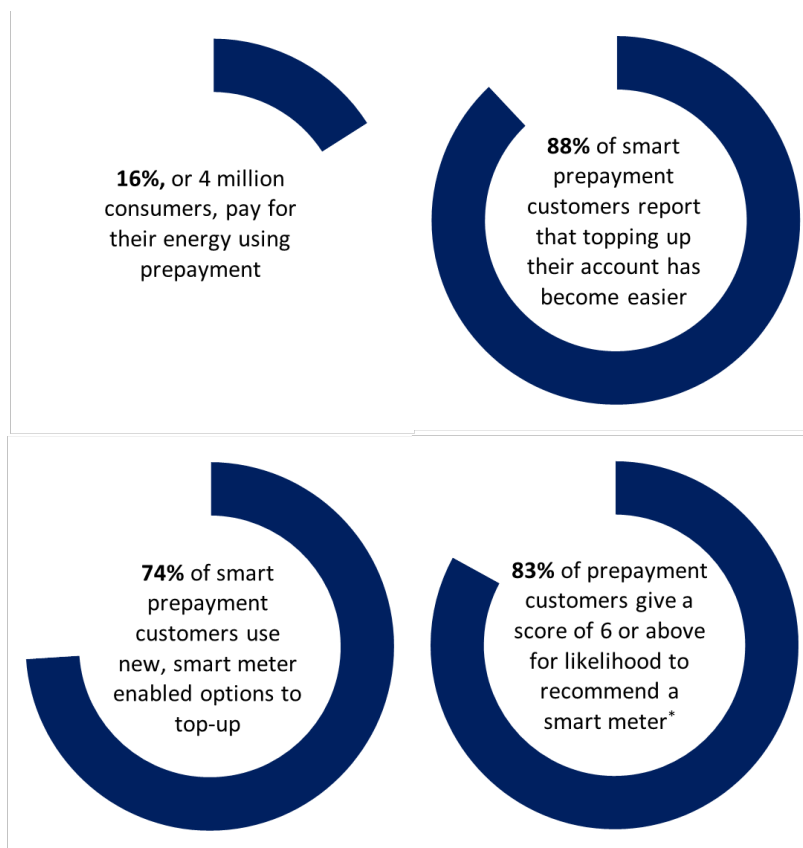
Prepayment benefits

Smart metering has transformed the prepayment consumer experience by offering a range of additional benefits. Consumers can now see their credit balance on the IHD rather than having to go into a metering cupboard. Additionally, they no longer need to go to a shop to top-up, they can do so via a mobile phone app or online. Suppliers are also able to send low credit and high consumption alerts via the IHD and can use data to help their customers who may be at risk of running out of credit.

Special arrangements are in place to ensure that prepayment consumers (who are more likely to be in vulnerable circumstances) receive targeted support and to monitor possible disbenefits. This includes a framework for post installation support to ensure that prepayment consumers obtain the full benefits of their meters and provision of emergency credit facilities. There are also safeguards in place for moving consumers between credit and prepayment.

As a result of these improvements, prepayment consumers are particularly strong advocates of smart metering. For some consumers in vulnerable circumstances, evidence suggests that smart metering has led to a significant improvement in quality of life.

Key evidence



* On a scale where 10 is 'definitely would recommend' and 1 is 'definitely would not recommend'

Future direction

Energy suppliers and industry are working together to ensure a smooth and timely transition to the roll-out of SMETS2 prepayment. It's important that we take the time necessary to get this right for these consumers, who as stated, are often more vulnerable. However, as industry confidence grows we expect energy suppliers to explore ways to prioritise the offer and installation of smart meters to prepayment consumers.

Engagement in the energy market

Smart meters give consumers information on energy consumption and costs, in near real-time. They bring an end to estimated billing and manual meter reads and reduce bill queries. All of this saves consumers time and gives them greater control in the energy market.

Smart metering is expected to expand consumer engagement in the energy market through increased switching between tariffs and suppliers. This will be driven by raising consumers' awareness of energy costs and by providing easier and quicker access to the data involved in managing the switching process, including opening it up to third party intermediaries.

Although some consumers with first-generation SMETS1 meters may have been deterred from switching because of the risk of losing smart services, Ofgem's 2018 Consumer Engagement in the Energy Market research suggests that households with a smart meter are slightly more likely (22%) to have switched supplier in the past 12 months than those without one (18%).

Key evidence

- industry information from the Data Communications Company (DCC) reported that the millionth SMETS2 meter connected to their system in May 2019, and;
- smart metering has led to a more than fifty per cent reduction in consumers contacting their suppliers for billing queries.

Future direction

The importance of an interoperable system was a key driver in the Government's SMETS1 end date decision. The enrolment of SMETS1 meters into the Data and Communication Company (DCC) is a longstanding policy commitment and the government has announced that DCC is required to offer an enrolment service for 99% of installed SMETS1 meters. We will continue to monitor switching and consumer experiences of smart meters as we transition to a fully interoperable system.

Consumer protection

BEIS and Ofgem have worked with a range of consumer and other organisations to use the opportunities created by smart metering to protect and provide benefits for those in vulnerable circumstances and to avoid possible disbenefits.

The Programme has put in place measures to ensure that consumer interests are fully protected. These measures include a Code of Practice covering the necessary steps required during installation; and a data protection and privacy framework giving consumers rights and control over who has access to their data.

Energy suppliers are required to identify vulnerable consumers and take their needs into account; this includes offering IHDs that meet accessibility needs.

Energy UK has confirmed that all their members have signed up to a 2017 framework to assist vulnerable and prepayment consumers. This includes providing information after installation and signposting consumers to sources of support. Where consumers are identified as requiring

further assistance, suppliers will provide a dedicated point of contact and establish relationships with support providers.

Smart Energy GB runs a partnership programme to raise awareness and understanding of smart meters among harder to reach audiences. Partner organisations train ‘Champions’ from regional and local organisations and award grants to stimulate engagement and activity at local level.

All these activities are delivering the Programme’s objective to ensure that vulnerable, low income and prepayment consumers can benefit from the roll-out.

Key evidence

- Only 2% of consumers surveyed by BEIS in 2017 cited data privacy as a concern and research by Citizens Advice has found that most consumers who have expressed concern felt reassured when the data access and privacy framework was explained; and
- BEIS research in 2017 found that the experiences of vulnerable consumers were broadly consistent with non-vulnerable consumers, for example reporting equally high levels of satisfaction with smart metering and usage of IHDs.

Future direction

The Programme continues to keep arrangements for data access and privacy under review to ensure that consumer privacy is adequately safeguarded. The Programme will continue to monitor the application of the framework to provide further support for vulnerable and prepayment consumers and work with Ofgem to ensure that all consumer protection requirements are met.

Distribution and consumer safety benefits

In the event of a power cut, smart meters will send Electricity Distribution Network Operators (DNOs) automatic alerts, enabling them to respond more quickly and avoiding the need for consumers to report the outage. This comes in addition to the improved effectiveness and reduction in costs which data from smart meters will enable, by giving DNOs better information from which to manage their networks and operations.

Ensuring the safety of the smart meter roll-out is a priority for the Programme. A monitoring and escalations process has been established to track safety incidents and co-ordinate industry action, building on an strong existing health and safety culture.

The metering installation process is also having substantial positive safety benefits, through installers carrying out visual safety checks on gas appliances and the state of key electricity supply wiring etc. This is identifying pre-existing gas and electricity safety issues so consumers are safer, sooner.

Key evidence

- In 2018, over 200,000 gas and electricity safety notices were issued by energy suppliers to consumers during meter installation visits, alerting them to unsafe appliances within their homes, and;

-
- 170,000 pre-existing network-related safety issues were identified and notified to the networks for resolution.

Future direction

Government will continue to work with the industry to ensure that the roll-out is undertaken safely. Where pre-existing safety issues with consumer gas appliances or their electricity supply (wiring, consumer units etc) are identified, government is engaging with Energy UK as they develop guidance with industry on processes to help ensure that consumers are given consistent support.

Innovation enabled by smart meters

The smart metering system will enable a range of innovative products and services for consumers within Great Britain's future smarter, low carbon energy system, helping to deliver estimated cumulative benefits of up to £40 billion over the next few decades.

Smart meters can help with the automation of off-peak charging of electric vehicles, which will reduce the costs to consumers and to the electricity system of this significant new demand for power. This is one form of Demand Side Response, where consumers are rewarded for being flexible in when and how they use energy through new energy tariffs and automation enabled by smart metering.

Smart energy tariffs could also be combined with home energy equipment such as solar PV and domestic battery storage. Pricing signals linked to time of use tariffs can be sent through the meter to inform equipment use, incentivise power export at particular times or prompt peer-to-peer trading; all of which will obtain the greatest value for equipment owners.

Smart metering data will support improved price comparison services that can identify the best available tariff based on a consumer's actual and forecast consumption profile to maximise their cost savings from switching. This includes automated switching services, where consumers sign up to be switched automatically to the cheapest deal. Energy data from smart metering can be used to provide entirely new services using data analytics. For example, services have been developed to break down consumption data to appliance level and to provide tailored advice on energy use.

Data analytics can also be used in the health and care sectors to analyse consumers' energy usage patterns which could be associated with developing health conditions or to identify changes to daily routines in patients with long term health conditions and alert their care network.

Key evidence

- By 2030 the National Grid projects 11 million electric vehicles on British roads;
- Shifting a proportion of demand from peak to off-peak times unlocked by smart meter functionality will save consumers up to an estimated £1bn in the period to 2030;

Future direction

We expect the development of innovative products and services to accelerate as the numbers of meters enrolled in the DCC grow and access to data by service providers becomes easier. BEIS will continue to work to ensure that the policy framework is innovation-friendly.

Government will continue to support innovation in smart energy products and services directly through its innovation Programme. In particular, two innovation competitions have been launched to develop new ways of using metering data to reduce household energy demand and to develop new ways of measuring the thermal efficiency of the housing stock.

Chapter 1 - Introduction

Vision and strategy for consumer engagement and benefits

The development of a world-leading smart energy system delivering secure, cheap and clean energy is an important part of the government's Industrial Strategy⁴. As our Clean Growth Strategy highlights, smart technologies and services will play a vital role in decarbonising the energy sector⁵.

Smart meters are the next generation of gas and electricity meters and will deliver a much-needed digital transformation of our energy system. Government is committed to ensuring that smart meters are offered to every home and small business by the end of 2020. They offer a range of intelligent functions and provide consumers with more accurate information, while bringing an end to estimated billing. They give consumers near real-time information on their energy consumption to help them control and manage their energy use, save money and reduce carbon emissions. Our 2019 Cost Benefit Analysis projected that the smart meter roll-out would deliver a total benefit to consumers of £7.6 billion over the lifetime of the Programme⁶.

In 2012, government set out its policy framework for consumers in the Smart Meter Consumer Engagement Strategy⁷ and associated Licence Conditions. The aims of the Strategy are:

- to build consumer support for the roll-out, by increasing confidence in the benefits of smart meters and by providing reassurance on areas of consumer concern;
- to facilitate the realisation of consumer benefits, by building acceptance of the installation of smart meters and by helping consumers to use smart metering to manage their energy consumption; and
- to ensure that vulnerable, low income and prepayment consumers can benefit from the roll-out.

The Strategy envisages that these aims will be achieved through a combination of awareness raising, provision of reassurance on areas of consumer concern, the countering of misinformation and levers of energy saving behaviour change. These levers include direct

⁴ BEIS, Industrial Strategy, Building a Britain fit for the future (BEIS, 2017):

<https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future>

⁵ BEIS, The Clean Growth Strategy, leading the way to a clean growth future (BEIS, October 2017):

<https://www.gov.uk/government/publications/clean-growth-strategy>

⁶ BEIS, Smart Metering Implementation Programme Cost Benefit Analysis (BEIS, 2019):

<https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

⁷ DECC, Smart Meter Consumer Engagement Strategy (DECC, 2012):

<https://www.gov.uk/government/consultations/smart-meter-consumer-engagement-strategy>

feedback data through an In-Home Display (IHD), offered to all households free of charge; and advice and guidance on energy and energy reduction.

The Strategy also sets out how consumer engagement will be delivered, with responsibility shared across energy suppliers, an independent body (set up and funded by energy suppliers through licence conditions) and the Government. The independent body was established in 2013 and is now known as Smart Energy GB.⁸

Aim and structure of this report

Government has undertaken regular monitoring of the benefits consumers realise from smart meters since the outset of the Programme. This report is part of this review process, taking stock of evidence collected to date on the realisation of consumer benefits and outlining government's ongoing work with partners to ensure that the benefits of the Programme are maximised.

The report focuses on consumer benefits, in line with our commitment during the passage of the Smart Meters Bill in 2018 to publish "a report that will provide a stocktake of progress towards delivering the consumer benefits of the Programme."⁹ The wider benefits that the Programme will enable, such as supplier and energy system benefits, are outside the scope of this report.

This report examines the full range of smart meter consumer benefits as set out in the original Prospectus Vision¹⁰ in 2010; as well as some additional benefits that have emerged since publication of this Vision. It draws together evidence from consumer representative bodies, Ofgem, energy suppliers, the 2018 National Audit Office report,¹¹ as well as the Government's research programme; and provides a view on the future direction for the realisation of benefits.

Consumer benefits are linked directly with installations. The report therefore starts with an overview of roll-out progress and is structured as follows:

- Chapter 2 looks at the progress of smart meter roll-out;
- Chapter 3 sets out evidence on how smart meters are providing consumers with more visibility and control of their energy consumption and spending;
- Chapter 4 focuses on prepayment consumer benefits;
- Chapter 5 looks at evidence on estimated bills and consumer engagement in the energy market more widely;
- Chapter 6 highlights steps taken to ensure consumer protections are maintained throughout the roll-out;

⁸ See: www.smartenergygb.org

⁹ House of Lords Hansard 15 May 2018 Volume 791, Smart Meters Bill: <https://hansard.parliament.uk/lords/2018-05-15/debates/AB94DD2E-269F-48B1-B2A5-0D0F51B37D22/SmartMetersBill>

¹⁰ Ofgem, Smart Metering Prospectus (Ofgem, 2010): <https://www.ofgem.gov.uk/ofgem-publications/63541/smart-metering-prospectuspdf>

¹¹ NAO, Rolling out smart meters (NAO, 2018): <https://www.nao.org.uk/report/rolling-out-smart-meters/>

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- Chapter 7 looks at energy distribution and consumer safety benefits; and,
 - Chapter 8 looks at the innovation smart meters are enabling.

Chapter 2 - Roll-out Progress

'The Government is committed to every home in Great Britain having smart energy meters, empowering people to manage their energy consumption and reduce their carbon emissions.'
 Smart Metering Prospectus, 2010

Progress to date



14.9 million smart/advanced meters
 in operation at the end of June 2019

More than **1 in 4** domestic households have a smart meter



1,009,100 smart meters installed in Q2 2019 by large suppliers

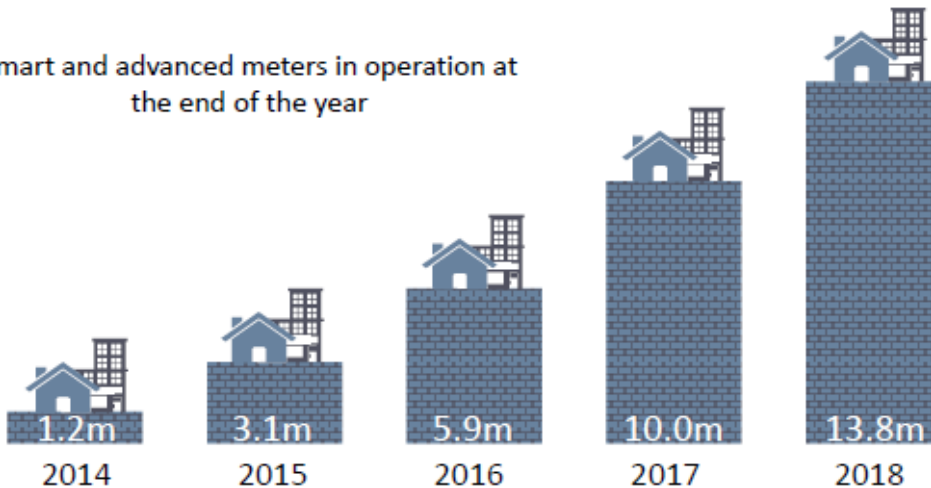
More than **1 in 3** smaller non-domestic sites have a smart/advanced meter



22,300 smart/advanced meters installed in Q2 2019 by large suppliers

2014 – 2018 Progress

Smart and advanced meters in operation at the end of the year



Programme milestones

March: more than 100,000 smart meters installed in a quarter for the first time

March: more than 1m smart meters installed in a quarter

December: more than 10m smart meters operating

June: more than 1m smart meters installed for the 10th consecutive quarter



Generating consumer understanding of and enthusiasm for smart meters

Smart Energy GB activity

Since 2013, Smart Energy GB has led the national public engagement campaign for the roll-out of smart meters in Great Britain.¹² In line with its licence objectives, Smart Energy GB's role is to drive consumer understanding of and enthusiasm for smart meters. Its Performance Management Framework (PMF) and yearly targets are set by large energy suppliers with consideration given to the level of demand required to support the installations planned for the year ahead and other tasks Smart Energy GB should perform to fulfil their Licence Conditions. As such, the focus of the consumer engagement campaign has evolved with the roll-out, ensuring that consumers receive appropriate messages at the right time.

Initially, the campaign focused on building understanding of smart meters and the roll-out, using a mass broadcast approach, supported by a variety of specific media, PR and social executions. Smart Energy GB's campaign featuring 'Gaz & Leccy' was designed to establish the need to get gas and electricity under control with smart meters highlighting the many benefits including accurate bills and the ability to track usage in pounds and pence. For microbusinesses, early Smart Energy GB activity included partnerships with trade bodies and developing business-focused media content. In late 2014, understanding of smart meters stood at just 18% of GB adults.¹³ By the end of 2017, this had increased dramatically to 58% of adults. Awareness of smart metering has also risen steadily over time, with 98% of people across Great Britain now aware of smart meters. Whilst awareness and understanding of smart metering is now high among domestic consumers, Smart Energy GB data suggests that only around 30% of non-home-based microbusinesses are aware that they are eligible for a smart meter.¹⁴ Citizens Advice "Smart Choices" microbusiness study stated that smart meters are not always associated with microbusinesses who tend to hear about smart metering from friends and family and mainly in a domestic context.¹⁵ Therefore, in order to boost awareness amongst microbusinesses and to highlight the relevance of smart metering in a business context, Smart Energy GB's remit in the non-domestic space has recently been extended (see Future Direction).

Since 2018, the focus of Smart Energy GB's activity has been on driving large numbers of consumers to seek or accept a smart meter. In 2018 this was primarily driven by the 'Save

¹² See: www.smartenergygb.org

¹³ To be classed as 'understanding' what a smart meter is, respondents have to be able to identify that a smart meter a) can only be installed by an energy supplier, b) allows you to see how much you are spending on energy in pounds and pence in near real time and c) means you will accurate rather than estimated bills from your energy supplier

¹⁴ Populus, Research for Smart Energy GB (Smart Energy GB, March 2018)

¹⁵ Citizens Advice, Smart Choices (Citizens Advice, 2017) <https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/smart-choices-investigating-microbusinesses-interest-in-and-understanding-of-smart-meters1/>

your energy for...' campaign which focused on the energy saving benefits of smart meters and making those benefits feel tangible and achievable. This was a multi-channel campaign complemented with PR activity, including a nationwide tour with home experts Kirstie Allsopp and Phil Spencer; and activity to demonstrate the connection between smart meters and the ability for consumers take up of electric vehicles. There is significant appetite for smart meters; among those without a smart meter, 39% - equivalent to 13 million people - say they would seek or accept a smart meter within the next six months¹⁶.

For 2019, campaign activity is focused not only on generating enthusiasm for smart meters and encouraging consumer take up but has been extended further. In April 2019, the 'I want' campaign was launched explaining the wider environmental benefits of smart metering and the importance of the roll-out to the future energy infrastructure of Great Britain.

Figure 1 - Image from the 'I want' campaign (provided by Smart Energy GB)



In working with harder to reach audiences, evaluation has shown that partnership marketing activity can increase interest in getting a smart meter, particularly through targeted face to face engagement. Partnerships with local, regional and national organisations, including National Energy Action, Action on Hearing Loss, National Housing Federation and the Royal Horticultural Society have supported the drive for consumer engagement.

Concerns about smart meters are still relatively low¹⁷ but increased media coverage does appear to be influencing consumers and a modest deterioration in reported levels of interest in getting a smart meter has been observed. However, follow-up surveys indicate that attitudes towards smart meters are not fixed and that consumers can move from unwilling to willing to actually having smart meters installed.

¹⁶ Smart Energy GB, Smart Energy Outlook (Smart Energy GB, March 2019): <https://www.smartenergygb.org/en-/media/SmartEnergy/essential-documents/press-resources/Documents/Smart-energy-outlook-March-2019.ashx>

¹⁷ Ibid.

Satisfaction with smart meters

Satisfaction with smart metering is high and sustained over time.

Around three-quarters (74%) of survey respondents are very or fairly satisfied with their smart meter almost a year after installation¹⁸ and those with smart meters are also likely to say they would recommend them to others. For example, when asked almost a year after installation how likely they were to recommend a smart meter to a friend, colleague or relative on a scale of 1 (definitely would not recommend) to 10 (definitely would), over three-quarters (76%) gave a score of 6 or more¹⁹.

This compares favourably with similar measures of consumer advocacy in the energy industry. For example, five in ten energy bill payers (53%) gave a score of 6 or more for how likely they would be to recommend their energy supplier in a survey for Energy UK.²⁰

Future direction

The smart meter programme remains on track to offer smart meters to every home and small business by the end of 2020. Over 14.9 million smart and advanced meters are now operating in homes and businesses across Britain²¹, helping to spur innovation and allowing consumers to take control of their energy supply.

Millions of energy consumers are already benefitting from smart meters and the overwhelming majority are having a positive experience, which is testament to the hard work, skill and dedication of all the organisations involved in delivering the roll-out. As eligibility for smart meter installations increases across 2019 and 2020 we expect millions more to benefit from the opportunities afforded by a smart meter installation.

Following several years of campaign activity from Smart Energy GB and energy suppliers, awareness and understanding of smart metering is now very high among domestic consumers, however there is still some way to go among non-domestic consumers. Smart Energy GB's original remit was very restricted in relation to microbusinesses: they could extend their campaign but only where it was cost-effective to do so. Therefore, following a consultation, in May 2019 BEIS published a decision to make it Smart Energy GB's (and via the obligation to

¹⁸ In November 2018 we published the second phase of the 2017 Smart Meter Customer Experience Study - a multi-phase research project designed to understand customer attitudes, experiences and outcomes at different points of the smart meter customer journey: Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

¹⁹ A score of 6 or above represents a positive answer, in that the respondent gave a score higher than the midpoint of 5 which represents a neutral response.

²⁰ Ipsos MORI (on behalf of Energy UK), Consumer Experiences of the Energy Market: Wave 4 (Ipsos MORI, 2015)

²¹ BEIS, Statistical release and data: Smart Meters, Great Britain, Quarter 2 2019 (BEIS, 2019): <https://www.gov.uk/government/statistics/statistical-release-and-data-smart-meters-great-britain-quarter-2-2019>

fund this work, energy suppliers), responsibility to run a dedicated smart meter awareness raising campaign for microbusinesses - in line with the non-domestic roll-out - starting in 2020.²²

Over the course of the roll-out, the Programme aims to upgrade 53 million meters in homes and smaller non-domestic sites. With consumers at the heart of Great Britain's roll-out, the emphasis throughout has been to take the time necessary to ensure thorough testing of systems and equipment so that consumers have a good experience from the outset. Government has also implemented measures to normalise smart metering as the default meter offer in Great Britain with the activation of the New and Replacement Obligation (NRO)²³ and the mandate on all energy suppliers to become DCC Users – a key tool to deliver interoperability across the sector.

Government is considering the policy landscape beyond the end of the existing roll-out obligation on energy suppliers, and what may be needed to support a market-wide roll-out of smart meters that continues to have consumer benefits at its heart. Government has, in parallel with this report, published a consultation on proposals for a regulatory framework for smart meters beyond the end of 2020.

²² BEIS, Smart Metering Implementation Programme: Realising non-domestic benefits (BEIS, 2019): <https://www.gov.uk/government/consultations/smart-metering-implementation-programme-realising-non-domestic-benefits>

²³ Smart Energy Code, Government Response to January 2019 Consultation on the New and Replacement Obligation (NRO) Activation Date (SEC, 2018): <https://smartenergycodecompany.co.uk/latest-news/government-response-to-january-2019-consultation-on-the-new-and-replacement-obligation-nro-activation-date/>

Chapter 3 - Energy Consumption Reduction

'Smart meters will provide consumers with more visibility and control of their energy consumption and spending, with real-time information available through in-home displays and other initiatives tailored to consumer needs and preferences. ...consumers will be empowered to use this information to change their consumption behaviour, thereby becoming more energy efficient and reducing their carbon emissions'

Smart Metering Prospectus, 2010

Background

Historically, the only feedback most consumers receive on how much energy they consume has been their energy bills. This feedback is often given long after the energy has been used (monthly, at best) and may be based on estimates rather than actual consumption data, which makes it difficult to attribute costs to behaviours. The smart meter roll-out changes this by providing consumers with access to near real-time energy feedback, alongside energy efficiency advice provided at installation.

The 2019 Cost Benefit Analysis²⁴ of the Smart Meter Programme estimates that smart meters will enable the delivery of £4.7 billion of energy reduction benefits to domestic consumers out to 2034 – just under a quarter of the currently quantified benefits from smart meters.

In 2011, the Programme commissioned the Central Office of Information (COI) to develop a framework for understanding and influencing domestic energy-consuming behaviour.²⁵ This behaviour change framework informed the approach of the Consumer Engagement Strategy,²⁶ which envisaged that energy saving benefits would be realised through the following four levers of behaviour change:

- **direct feedback** – near real-time consumption data through an In-Home Display (IHD) (potentially complemented by other platforms);
- **advice and guidance** – on energy and energy reduction (by paper, web, mobile, face-to-face or phone) and the development of applications and services, such as home energy reports, that can help interpret data and point towards better choices;

²⁴ BEIS, Smart Metering Implementation Programme Cost Benefit Analysis (BEIS, 2019):

<https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

²⁵ See DECC, Consumer Engagement Strategy Consultation (DECC, 2012):

<http://www.decc.gov.uk/assets/decc/11/consultation/smart-metering-imp-prog/4897-consumer-engagement-strategy-con-doc.pdf>

²⁶ DECC, Smart Meter Consumer Engagement Strategy (DECC, 2012):

<https://www.gov.uk/government/consultations/smart-meter-consumer-engagement-strategy>

-
- **motivational campaigns** – designed to raise energy literacy and motivation to reduce consumption. This includes marketing campaigns and a range of community delivered initiatives; and
 - **indirect feedback** – aggregated or non-real time data, e.g. historic or comparative information on bills.

Progress to date

Government has undertaken regular monitoring of the benefits consumers realise from smart meters since the beginning of the roll-out. This section presents evidence on progress of the implementation of the four levers of energy saving behaviour change as set out in the Consumer Engagement Strategy and evidence on the realisation of domestic energy saving benefits²⁷ as well as evidence on the realisation of non-domestic energy saving benefits.

Direct feedback

There is a range of robust international evidence demonstrating that real-time energy feedback can help consumers reduce their energy consumption.²⁸ In Great Britain, large-scale trials (the Energy Demand Research Project, EDRP) showed that a combination of a smart meter and a real-time feedback display reduced consumption by 2-4% on average and that this impact was sustained over two years.²⁹ To help consumers realise energy consumption reduction benefits from their smart meters, in 2012 government mandated that all energy suppliers must offer a free In-Home Display (IHD) which displays near real-time energy feedback to domestic consumers as part of their smart meter installation.

IHDs provide the consumer with near real-time information on actual energy consumption taken from smart electricity and gas meters through a wireless home area network. IHDs also have other helpful features, such as the ability to view historical consumption. With accurate information at their fingertips, consumers can far more easily understand how they use energy and how they can make changes to use less and save money on their bills.

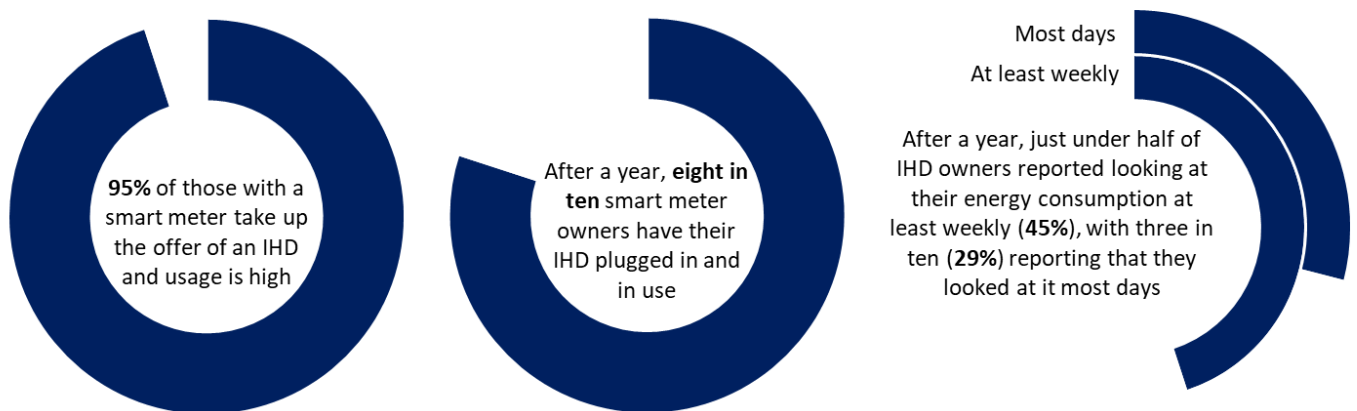
IHDs are proving to be highly popular with consumers as Figure 2 below highlights:

²⁷ DECC, Information requirements for monitoring and evaluation of smart meters (DECC, 2012):
<https://www.gov.uk/government/consultations/information-requirements-for-monitoring-and-evaluation-of-smart-meters>

²⁸ Vaasa ETT, The role of data for consumer centric markets and solutions (European Smart Metering Industry Group, 2018):
<https://esmig.eu/resource/report-role-data-consumer-centric-energy>

²⁹ AECOM, Energy Demand Research Project: Final Analysis, (Ofgem, 2011):
<https://www.ofgem.gov.uk/gas/retail-market/metering/transition-smart-meters/energy-demand-research-project>

Figure 2 - Take up and use of IHDs³⁰



"I find it very, very useful, because you can see every day how much you use; the light changes colour... You know what you are using more because it comes to red."
(Male, 75 and over, credit consumer, retired, private renter)³¹

Due to the variety of third-party metering and energy services already available in the non-domestic sector, and the different requirements of businesses, the obligation to offer an in-home display (IHD) does not apply to non-domestic customers. Rather, energy suppliers offer access to data via a variety of feedback mechanisms according to their own commercial strategies, including online portals, dashboards and displays with plans for further innovation in feedback mechanisms in future.

IHD alternative trials

In 2016, recognising that there were a number of promising new areas of technology or methods that could act as alternatives to IHDs but a lack of robust, independent, GB-based evidence on the efficacy of these alternative approaches, suppliers were allowed to apply to undertake trials of IHD alternatives.³² It was in consumers' interests that we gather robust evidence on alternative (potentially lower cost) approaches to ensure that consumers achieve maximum energy saving benefits from the roll-out programme. It was also necessary to avoid the risk of alternative engagement tools being introduced and leading to inferior results.

³⁰ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

Base sizes used in Figure 1 are: chart 1, 2015 smart meter customers surveyed shortly after their installation; base for charts 2 and 3 is 725 of the same smart meter customers who had accepted an IHD offer, surveyed a year after installation.

³¹ Ibid.

³² DECC, Smart Meters Derogation Guidance (DECC, 2016): <https://www.gov.uk/government/publications/smart-meters-derogation-guidance-supporting-energy-supplier-applications-for-trials-of-in-home-display-alternatives>

Two suppliers trialled smart phone apps with near real-time feedback and functions such as push notifications and tailored tips. An independent evaluation of these trials, carried out by The Behavioural Insights Team, concluded that the apps were likely to be less effective than IHDs at reducing customers' energy consumption.³³ Despite this, research carried out as part of the trials showed that the apps provided features that consumers valued, including push notifications, which could complement feedback provided by IHDs and enhance consumer capability for reducing energy consumption and their energy bills.

Advice and guidance

The Smart Metering Installation Code of Practice (SMICoP) requires that the smart meter and IHD are demonstrated to the consumer in a clear and accurate manner and that this demonstration is easy to understand.³⁴ SMICoP also requires energy suppliers to send or leave with their customers instructions on how to operate the IHD and smart meter in a written or other suitable format.

Research consistently shows that almost all consumers are receiving guidance from their installer on how to use their smart meter and IHD. For example, BEIS' 2017 Customer Experience Study found that 97% recalled receiving guidance of some form and 77% recalled getting a physical demonstration of how to use the IHD.³⁵

SMICoP also requires energy suppliers to provide consumers with energy saving advice during the smart meter installation. The quality of advice and guidance provided to consumers at installation is fundamental to high levels of engagement with the smart meter and IHD. Research carried out by government shows that high quality, tailored advice that is appropriate to consumers' needs is an enabler of energy reduction. This research also demonstrated the central role of meter installers as 'agents of change', by explaining smart metering to consumers, discussing how IHDs can be used to help save energy and offering tailored advice on energy efficiency.³⁶

In response to these findings, government commissioned research to test and pilot an approach for energy suppliers to deliver tailored energy efficiency advice during the smart meter installation which leads householders to adopt energy efficient behaviours. The toolkit and factsheets developed as outputs from this project³⁷ have since been utilised by a number of suppliers.

³³ Behavioural Insights Team, Impacts of Alternatives to In-Home Displays on customers' energy consumption (BEIS, September 2019): <https://www.gov.uk/government/publications/smart-meters-derogation-guidance-supporting-energy-supplier-applications-for-trials-of-in-home-display-alternatives>

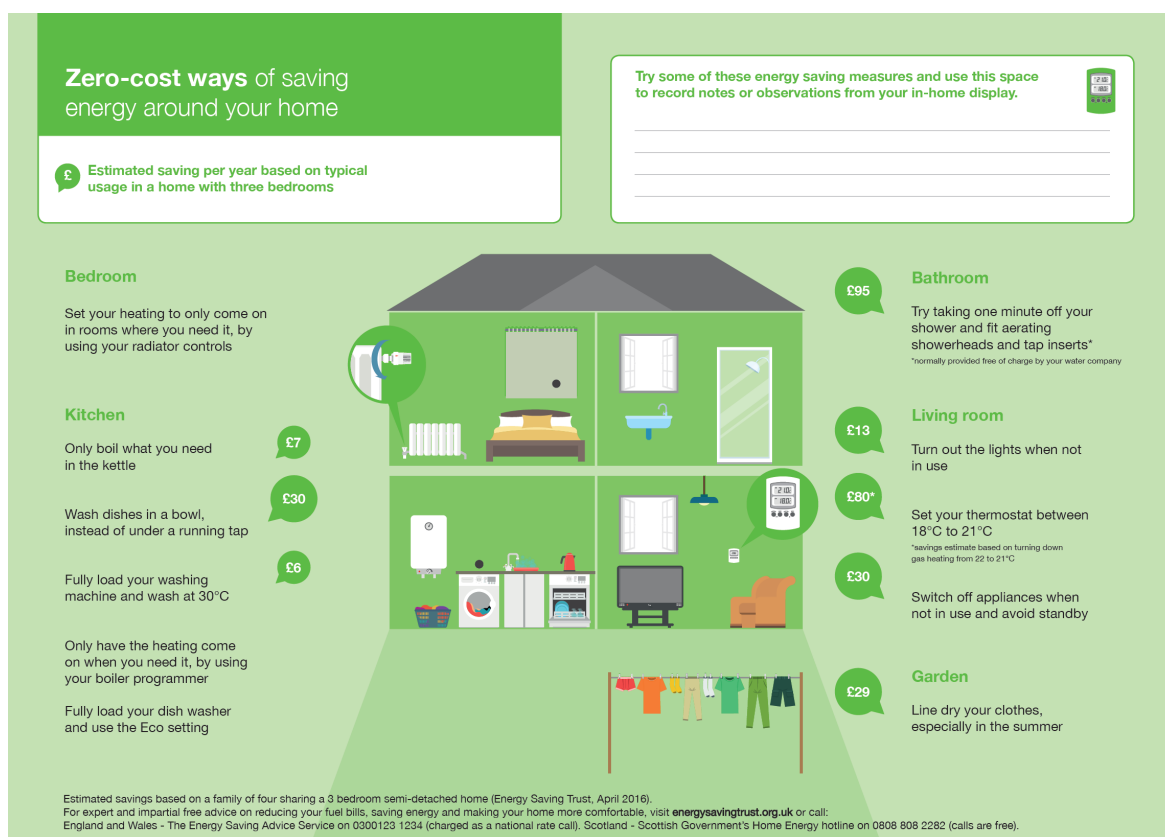
³⁴ Smart Metering Installation Code of Practice: <http://www.smicop.co.uk/SitePages/Home.aspx>

³⁵ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

³⁶ DECC, Smart Metering Early Learning Project (DECC, 2015): <https://www.gov.uk/government/publications/smart-metering-early-learning-project-and-small-scale-behaviour-trials>

³⁷ BEIS, Best practice guidance for the delivery of energy efficiency advice (2017): <https://www.gov.uk/government/publications/best-practice-guidance-for-the-delivery-of-energy-efficiency-advice-to-households-during-smart-meter-installation-visits>

Figure 3 - Example of factsheet from government commissioned toolkit to support the delivery of tailored energy efficiency advice at installation



Recognising the importance of tailored energy efficiency advice, the Smart Meter Installation Code of Practice was updated in February 2018 to require energy suppliers to take the consumer’s home and energy habits into account when providing energy saving advice.

While the majority of consumers recall receiving energy saving advice from their installers, performance across energy suppliers is inconsistent and a significant minority of consumers are not being offered guidance. A BEIS-commissioned programme of ‘mystery shopping’ of installations (mostly in Spring 2017) found that only 45% of mystery shoppers recalled being offered energy saving advice.³⁸ More recently, the latest quarterly Smart Meter Installation Code of Practice (SMICoP) compliance survey found that 59% of consumers recalled being offered it.

Positively, the vast majority of energy efficiency guidance provided to consumers is tailored to their needs and the provision of IHDs and energy efficiency guidance is paying off. BEIS’ 2017 Customer Experience Study found that after a year, around half of consumers said their smart meter and IHD had helped improve understanding of their energy consumption.

Motivational campaigns

In addition to providing consumers with direct feedback on energy consumption through the IHD and delivering energy efficiency advice at installation, Smart Energy GB has an objective

³⁸ GfK Mystery Shopping (now part of Ipsos MORI), Mystery Shopping of Smart Meter Installations (BEIS, 2019): <https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

to 'increase consumer willingness to use smart meters to change their behaviours so as to enable them to reduce their energy consumption.' Smart Energy GB's recent campaigns have been designed to drive energy saving behaviour by serving as a regular reminder of the benefits of smart meters and thus prompting smart meter owners to keep using them.

The personal energy savings possible with a smart meter were at the heart of Smart Energy GB's 'Save your energy for...' campaign during 2018. This mass marketing approach was complemented with other activity to encourage behaviour change including educational videos and energy saving tips and recipes. Recent research shows that consumers with a smart meter are more likely to understand their own energy use and have a desire to reduce it.³⁹

Indirect feedback (aggregated or non-real time data)

The roll-out of smart meters provides a platform to access energy consumption data which supports the development and implementation of innovative products and services that can help consumers to become more energy efficient. These products and services include home energy reports that use smart meter data to create household-specific recommendations on energy efficiency.

Smart meters lead to a step-change in the availability and granularity of energy consumption information. To ensure that appropriate safeguards are in place, while enabling proportionate access to energy consumption data, government established a Data Access and Privacy Framework. A central principle of the framework is that energy consumers should be able to easily access their own smart metering energy consumption data and share this with third parties, if they wish to do so.

Access to this data also enables energy suppliers and other parties to improve the accuracy and utility of feedback they provide and to develop new products and services. Alongside the roll-out of smart meters, government expects energy suppliers to consider options to provide ongoing indirect feedback to consumers that will help them manage their energy consumption.

A review of the Data Access and Privacy Framework⁴⁰, undertaken in 2018, identified a number of areas where new products and services are already being developed or considered, including personalised energy efficiency advice based on smart meter data on a scale consistent with the current stage of the roll-out. We expect more innovation as the roll-out of SMETS2 further ramps up and SMETS1 meters are enrolled into the DCC. In addition, some energy suppliers are starting to offer apps that provide personalised energy saving recommendations to consumers based on their actual energy consumption and others are using information collected during the installation to provide a customised home energy report.

³⁹ Populus, Smart Meters and Energy Usage, (Smart Energy GB, April 2019): <https://www.smartenergygb.org/en/-/media/SmartEnergy/essential-documents/press-resources/Documents/Smart-meters-and-energy-usage-May-2019.ashx>

⁴⁰ BEIS, Smart Metering Implementation Programme: review of the Data Access and Privacy Framework (BEIS, 2018): <https://www.gov.uk/government/publications/smart-metering-implementation-programme-review-of-the-data-access-and-privacy-framework>

Evidence on domestic energy consumption reduction

Analysis of energy consumption data confirms that the policy framework is leading consumers with smart meters to save energy in line with the Programme's projections. Analysis undertaken by the Programme among domestic consumers in 2015 found that compared to traditional meters, for electricity, smart-type meters enabled an average annual reduction of 2.3 per cent and for gas, an average annual reduction of 1.5 per cent.⁴¹ These findings are statistically significant and provide evidence that smart-type meters enabled energy saving benefits to be realised during an early stage in the Programme's development.⁴² Given that this research was carried out with early smart meter installations (2011), it concluded that with enhancements to consumer engagement 'it is realistic to expect durable energy savings of 3%.' Supporting this conclusion, British Gas recently reported that their smart meter customers are making savings over two years of 4.1% on electricity consumption and 2.5% on gas.⁴³ BEIS has recently completed a review of evidence on consumer energy savings held by energy suppliers. In line with the conclusions of the research carried out by the Programme in 2015, this concluded that the savings forecast by the Programme are achievable and that consumer engagement approaches used by better performing suppliers could deliver larger savings for their customers.

In addition to analysis of energy consumption data, a range of research shows that consumers state they have taken steps to reduce their energy consumption since having a smart meter installed. For example, more than 6 in 10 (62%) feel that having a smart meter has made a difference in some way to how they use energy in their home⁴⁴ and around three-quarters (73%) of consumers say they do more of at least one energy saving activity since getting their smart meter.⁴⁵ Smart meter owners have also been found to be more likely to think about, keep track of and understand their energy usage, with those who have had their smart meter for longer undertaking the most energy saving activities.⁴⁶

⁴¹ For electricity with 95 per cent confidence intervals between 1.6 per cent and 2.8 per cent, and for gas with 95 per cent confidence intervals between 0.9 per cent and 2.1 per cent.

⁴² DECC, Smart Metering Early Learning Project (DECC, 2015): <https://www.gov.uk/government/publications/smart-metering-early-learning-project-and-small-scale-behaviour-trials>

⁴³ NAO, Rolling out smart meters (2018): <https://www.nao.org.uk/report/rolling-out-smart-meters/>

⁴⁴ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁴⁵ Smart Energy GB, Smart Energy Outlook (Smart Energy GB, March 2019): <https://www.smartenergygb.org/en/-/media/SmartEnergy/essential-documents/press-resources/Documents/Smart-energy-outlook-March-2019.ashx>

⁴⁶ *ibid*

Evidence on non-domestic energy consumption reduction

In 2017 BEIS conducted research involving 41 case studies of non-domestic sites, most of which had smart meters installed.⁴⁷ The research was conducted to try and understand how non-domestic sites make energy related decisions, the ways in which smart meter data is being used for energy management and what further action might be required to maximise smart meter benefits in these areas.

Some case studies cited energy savings benefits, as a result of engagement with their smart meter data. One restaurant chain reported a 6% reduction in energy use over 12 months across all their restaurants. Similarly, an engaged secondary school cut their gas consumption in the Easter holidays by four fifths, after data alerted them to out-of-hours usage.⁴⁸ Smaller independent sites tended to be less aware of the availability of smart meter data or its potential although when shown the types of information that could be accessed from a smart meter, initial reactions suggested that some smaller, energy-intensive businesses can be encouraged to adopt a more proactive approach to energy management.

Overall, the study concluded that smart/advanced meter data has the potential to prompt non-domestic organisations into taking energy efficiency action, providing they know how to interpret data within their own contexts, and a cost-effective solution is available. This suggests that forecasted energy savings benefits can be realised, provided organisations are able to turn energy data into energy efficiency actions. In particular, the research suggested that new (free or low-cost) products and services which “push” alerts or recommendations to users or identify the running costs of individual equipment, are seen as likely to be more useful for smaller organisations facing additional constraints.

These findings were reaffirmed by Citizens Advice research⁴⁹ which looked at microbusinesses’ expectations of smart metering. This found that some smart users, who have the potential to be engaged, needed advice and tips that go beyond raw data to maximise the benefits of smart metering. In particular, many want an IHD, app or consumer-facing interface to do the ‘heavy-lifting’ for them - turning businesses’ energy usage data into energy efficiency advice.

This research led BEIS to conclude that innovation and tailored, actionable energy insights are vital to unlocking the benefits of non-domestic smart metering. BEIS market research at that time showed that there was a market failure, in terms of both third party and energy utility

⁴⁷ Creative Research, Smart metering in non-domestic premises: early research findings (BEIS, 2017): <https://www.gov.uk/government/publications/smart-metering-in-non-domestic-premises-early-research-findings>

⁴⁸ Savings quoted were provided by case study sites as part of a qualitative research study. Therefore, they have not been validated by energy consumption data and may not be representative of wider savings from other organisations.

⁴⁹ Citizens Advice, Smart Choices (Citizens Advice, 2017): <https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/smart-choices-investigating-microbusinesses-interest-in-and-understanding-of-smart-meters1/>

market offerings, for products and services based on data analytics to provide such actionable information for smaller non-domestic sites.

Therefore, in December 2017 BEIS launched an £8.8 million Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC) with the objective of stimulating a non-domestic smart energy services market for smaller sites in the hospitality, retail and schools sectors. NDSEMIC is developing tools and services (such as online platforms and apps) which tailor energy insights to organisational contexts, through a range of mechanisms such as benchmarking, real-time alerts, bespoke advice and regular performance trends. In phase 1 of the competition, BEIS awarded funds to nine competition partners. In phase 2 of the competition, BEIS has continued to fund seven of the projects: ANDtr, Considerate Hoteliers, Element Energy, Hildebrand, Hoare Lea, Samsung and Transition Bath. More information about the specific projects being developed can be found on GOV.UK.⁵⁰ In addition, energy suppliers continue to develop their smart offerings for non-domestic consumers. Energy suppliers offer access to data to non-domestic consumers via a range of feedback mechanisms including online portals, displays and dashboards, whilst advancing plans for future innovations for SMEs.

Of particular importance for benefits realisation is NDSEMIC's embedded £1.5 million programme of research and evaluation, being led by Ipsos MORI and the Carbon Trust. NDSEMIC has been designed in a way that requires recipients of funding to test and pilot their innovations throughout 2019 and early 2020. This research programme will generate important lessons around which ways of presenting energy data, tips and supporting advice are effective at stimulating behaviour change and delivering energy savings benefits for varying non-domestic sites. The Programme also has a 'coordination' strand, aiming to connect funded projects with wider market players including suppliers and trade bodies to support longer-term goals of market stimulation, as well as to disseminate learnings about designing tailored non-domestic products and services to the wider market. An interim report from this research programme has been published alongside this report and a full series of reports collating findings and learnings will be published in 2020.

⁵⁰ BEIS, Non-Domestic Smart Energy Management Innovation Competition (BEIS, 2017): <https://www.gov.uk/government/publications/non-domestic-smart-energy-management-innovation-competition>



Case Study - My-Yen, Cardiff



My-Yen lives in Cardiff with her husband and child. She always tried to stay on top of her energy bills, but often didn't understand what they meant or how they were calculated. Having a smart meter has solved this problem and now My-Yen is using this new information to cut back on both her bills and her environmental impact.

I always used to ask my energy supplier for a breakdown of my quarterly bill, but I found it difficult to relate this to my own consumption and how I could cut back. When my energy provider suggested getting a smart meter that would show me my daily energy consumption, it seemed like a great way to solve this problem.

Getting a smart meter had an immediate impact on my understanding of my bills. I'm far more conscious of what appliances I am using and what level my heating is set at now, as I can see how much they can cost almost straight away. I've set a budget of spending £2 a day on my energy use which my smart meter will alert me to when I get close to reaching it. If I find I've gone over budget, I make sure to think about what I can do/turn off to keep my bill down. It's helped me to identify some of my more high-energy appliances, but also find the small changes I can make that can really have an impact. For example, I always turn things off at the mains now and I'm more conscious of when and how I'm charging some devices, such as my phone, all in an effort to lower my spending and hit my target.

I've always been quite environmentally aware so the smart meter has been a great way to be even greener in the home. Being able to see what my energy consumption actually means has helped me be a lot less absent minded in my power use and make changes that are both beneficial to me and the planet. It's even helped me convince my husband to be greener!

I think it's great that such a simple gadget can help in such diverse ways, both if you want to be more frugal with your energy use and if you want to help the planet. If like me you care about both, I think it's a must have.

"Getting a smart meter had an immediate impact on my understanding of my bills. I'm far more conscious of what appliances I am using and what level my heating is set at now, as I can see how much they can cost almost straight away."

Case Study provided by Smart Energy GB

Future direction

The evidence presented in this chapter supports the current policy framework established to enable the realisation of energy consumption reduction benefits for consumers. The provision of real-time energy feedback through the IHD mandate for domestic consumers is proving effective in helping consumers to reduce their energy consumption. The IHD mandate will therefore remain a cornerstone of the Programme. Suppliers are also able to enhance their offer (should they wish to do so) to provide consumers with apps or other complementary

products or services in addition to the offer of the IHD. The trials of alternatives to IHDs showed engagement with apps could complement engagement with IHDs, for example.

However, there are some areas where improvements in implementation could increase benefits further. For example, while most consumers recall receiving the guidance expected at installation, a substantial minority have not received the service expected of energy suppliers and installers. Qualitative feedback suggests there is notable variation in the quality of advice provided by installers, even amongst those of the same energy supplier.⁵¹

As noted in the NAO's November 2018 report on the smart meter roll-out, Ofgem (as the regulator) is engaging with suppliers on this disparity in the provision of energy saving advice, including setting expectations for industry and setting performance improvement targets for those suppliers who have consistently failed to meet their obligations.⁵² There is a range of tools and examples of best practice which energy suppliers can use to improve their energy efficiency guidance. For example, BEIS has undertaken significant work to share best practice, including the development of a toolkit with tried and tested factsheets that can be provided to consumers. This has been adopted by a number of energy suppliers.⁵³ In addition, BEIS recently facilitated the sharing of good practice between energy suppliers through the Programme's Consumer Reference Group.

Positively, evidence to date shows that domestic consumers are realising the energy saving benefits expected by the Programme. However, the fact that a noteworthy number of consumers have not received energy saving advice suggests there is an opportunity for improvement. To maximise consumer engagement with energy efficiency guidance and to challenge installers if they do not offer advice, suppliers should inform their customers in advance of the installation that they will be offered advice. We are continuing to monitor suppliers' SMICoP compliance and exploring ways to further improve the quality of energy saving advice provided to consumers at the point of installation.

The 2018 National Audit Office (NAO) review of the roll-out recommended that the Department should begin to 'systematically monitor the actual energy savings that smart meters achieve'.⁵⁴ The Department has since worked with energy suppliers to assess the evidence they hold in this area and to establish an ongoing process for periodic collection and review.

To further drive innovation within the domestic sector, BEIS launched the Smart Energy Savings (SENS) Competition in February 2019. It will provide successful applicants with a share of £6.25 million in funding to support the development and trialling of products and services that can deliver energy savings through improved energy feedback and advice. It is intended to deliver energy savings in excess of those included in the Programme's cost benefit

⁵¹ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁵² [Ofgem open letter 1st December 2017, "Smart Meter Roll-out: DCC user mandate, future roll-out plans and consumer experience"](#); [Ofgem letter to BEIS Select Committee 23rd January 2019](#)

⁵³ BEIS, Best practice guidance for the delivery of energy efficiency advice (BEIS, 2017):

<https://www.gov.uk/government/publications/best-practice-guidance-for-the-delivery-of-energy-efficiency-advice-to-households-during-smart-meter-installation-visits>

⁵⁴ NAO, Rolling out smart meters (NAO, 2018): <https://www.nao.org.uk/report/rolling-out-smart-meters/>

analysis, promote residential energy efficiency and support market development. Please see Chapter 10 for more information on the SENS competition.

2019 will see BEIS further review the policy framework to facilitate the realisation of non-domestic smart metering energy consumption reduction benefits. BEIS is also exploring whether any further action is required to unlock the access to smart meter data required to deliver benefits to consumers, both from the perspective of non-domestic consumers requesting access to their energy data to engage with their consumption, and third parties seeking to innovate with smart meter data to create innovations that engage consumers with their energy data and deliver consumer benefits.

Chapter 4 - Prepayment benefits

'Smart meters can operate in either credit or prepayment mode and suppliers can remotely switch meters between the two. Remote functionality will allow switching between payment methods and will open-up additional payment channels for prepayment customers. Physical keys will no longer be needed so payment options can become more flexible – as they are for mobile phone top-ups (e.g. over the phone or via the internet).'

Smart Metering Prospectus 2010

Background

As of October 2018, around 4 million consumers in Great Britain were paying for their energy using prepayment, representing 16% of all GB consumers.⁵⁵ Smart meters are transforming the prepayment consumer experience, offering a range of additional benefits specifically for these customers. For example, being able to see the amount of credit available on an In-Home Display (IHD) and topping-up remotely can help to improve budgeting and bring peace of mind. These benefits are especially important because prepayment consumers are much more likely to be in vulnerable circumstances than those who pay by credit. Ofgem note, for example, that more than half of those in the poorest income bracket have a prepayment meter.⁵⁶

Progress to date

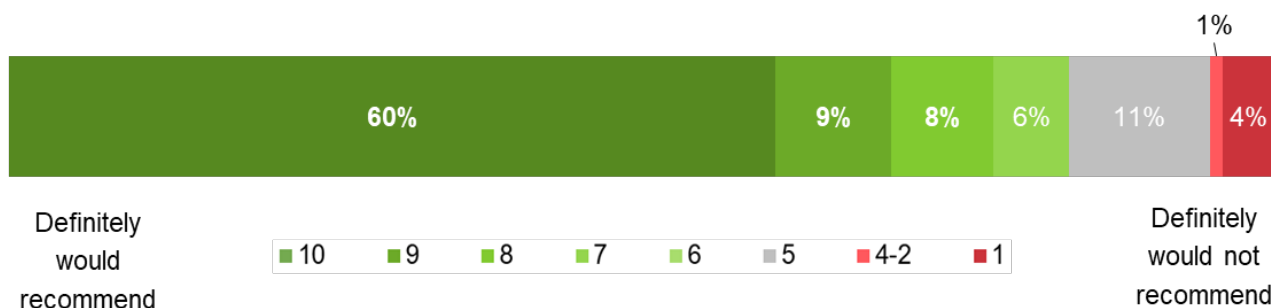
The vast majority of energy suppliers now support smart prepayment and progress is being made in the transition to SMETS2.

A wide range of evidence highlights that smart prepayment consumers are experiencing significant benefits, and Prepayment consumers are amongst the strongest advocates for smart meters as a result.

⁵⁵ Ofgem, State of the Energy Market October (Ofgem, 2018), p.32: <https://www.ofgem.gov.uk/publications-and-updates/state-energy-market-2018>

⁵⁶ Ibid, p.67.

Figure 4 - Likelihood to recommend a smart meter to a friend, colleague or relative (base: 825 prepayment customers interviewed a year after installation)⁵⁷



60% of prepayment respondents gave a top score of 10 out of 10 (compared to 35% of credit respondents) and more than eight in ten (83%) gave a score of 6 or above (compared to 74% of credit respondents).⁵⁸

Topping-up

The process of topping-up credit is made smoother and more convenient by smart metering. Remote functionality enables credit to be updated remotely which means a greater range of payment options are available. These include topping up online, over the phone or via a smart phone application. This means that prepayment consumers can top-up their credit from the comfort of their own home or on the go, no longer needing to make a trip to a shop or PayPoint outlet.

Topping up is also easier for those who want or need to carry on topping up via a shop.⁵⁹ Physical keys are no longer needed and credit balances are almost instantaneously updated, meaning consumers no longer need to rush home to top-up their meter. This can reduce anxiety for those on prepayment terms who may worry about unexpectedly going off supply.⁶⁰

Not requiring a physical key also means consumers no longer need to access their meter to load credit. This can be of particular benefit to older consumers or those with mobility issues who may struggle to reach meters or for those with meters located outside or in hard-to-reach locations:

‘This is what I have to do, I have to get on my hands and knees. I hate this, I really do. I shouldn’t have to do this. [] I will get to a time when I can’t do this.’ (Traditional Prepayment Depth Interview)

⁵⁷ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁵⁸ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁵⁹ Ofgem has committed to cash remaining a payment option for PPM consumers: <https://www.ofgem.gov.uk/publications-and-updates/smart-prepayment-smarter-market-our-decisions>

⁶⁰ CSE, Smart Prepayment and Fuel Poverty: A report for Eaga charitable Trust (Eaga CT, October 2016): <https://www.eagacharitabletrust.org/understanding-the-impact-of-smart-prepayment-on-fuel-poverty/>

'I had a key before and I had to go outside in the dark to put more electric on the meter, which could be really inconvenient.' (Smart Prepayment Depth Interview)

'That's brilliant, that you wouldn't have to go out in the cold. I know a lot of people don't have to but to me, with everyone looking at you, especially there, because it's a really busy road. The bus stop is there and everything, I'm there on my knees doing that, oh god.' (Traditional Prepayment Depth Interview)⁶¹

Research in 2017 found that that after a year with a smart meter, three-quarters (74%) of smart prepayment consumers were using new, more convenient smart meter-enabled options to top-up. Consumers were highly enthusiastic about the greater sense of control they felt over their consumption and credit balance provided by having more flexible top-up options (apps, telephone and online). Interview participants often highlighted how they were no longer worried about running out of credit unexpectedly because they could now top-up without having to leave the house or on-the-go. Almost six in ten said they most frequently topped up via an app (57%), while one in ten (13%) said they topped up online. Only a quarter (26%) said they still used a shop or PayPoint outlet as their most frequent mode of topping-up. Overall, almost nine in ten (88%) said that topping-up had become easier since getting a smart meter.⁶²

Furthermore, while very few smart credit consumers used smart phone apps for monitoring their energy usage, almost half of prepayment consumers in this research study checked their consumption or credit balance on a smart phone app at least weekly. The research indicated that these applications were core to their smart meter experience, offering a convenient 'one-stop shop' to both monitor and top-up their credit balance.

"It's something that I've raved about. Whenever I hear people that don't have a smart meter, I always end up getting my app out." (Female, 25-34, prepayment consumer, working full time, private renter)⁶³

Both early⁶⁴ and more recent⁶⁵ Government research highlight that the demonstration and explanation of how to use the smart meter during the installation is of particular importance for prepayment consumers. Research by CSE for the Eaga charitable trust also highlights the importance of the IHD demonstration.⁶⁶ This is central to helping prepayment consumers to understand how to top-up effectively, as well as how to manage their account balance. A range

⁶¹ DECC, Smart Metering Early Learning Project (DECC, 2015):

<https://www.gov.uk/government/publications/smart-metering-early-learning-project-and-small-scale-behaviour-trials>

⁶² Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁶³ Ibid.

⁶⁴ Creative Research, Smart Metering Early Learning Project: Prepayment Qualitative Research (DECC, 2015):

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407550/7_Smart_PPM_report_FINAL_FOR_PUBLICATION_for_PDF.pdf

⁶⁵ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁶⁶ CSE, Smart Prepayment and Fuel Poverty: A report for Eaga charitable Trust (Eaga CT, October 2016):

<https://www.eagacharitabletrust.org/understanding-the-impact-of-smart-prepayment-on-fuel-poverty/>

of research including research from Citizens Advice and NEA highlights that not understanding how to top-up can induce worry for some, as can difficulties in loading credit onto the meter.⁶⁷ To date these issues seem rare. Nine in ten (89%) smart prepayment customers are satisfied with the guidance they receive at install on how the smart meter works and after a year, fewer than one in ten (7%) say they are dissatisfied with their smart meter experience.⁶⁸

It is important we continue to ensure that every prepayment consumer is adequately supported in the transition to smart meters so that they can reap the full benefits of having a smart meter. As such we are working with industry through existing forums and have developed a set of support principles for prepayment and vulnerable consumers to enable targeted support.⁶⁹ Ofgem are adapting their framework to the roll-out of smart meters and extending protection that exists in the traditional metering world accordingly, which will include the development of new indicators.⁷⁰

Managing account balance and self-disconnection

With smart prepayment, consumers can access a range of new tools to help them keep on top of their credit balance. Smart prepayment consumers can see in real-time how much credit they have left on their In-Home Display (IHD) or via other products and services, such as online accounts or smart phone applications. They no longer need to access their meter to check their balance, which may be in a cupboard or outside. Where provided, low credit and high consumption alerts are much harder to miss as on an IHD; which can also be used to more easily monitor energy consumption and set budgets.

Prepayment consumers cite being better able to manage their account balance as the main reason for their enthusiasm for their smart meter; often feeding back that they feel more reassured and in control with their smart prepayment meter. Research has also found that the vast majority of prepayment consumers are making use of the new tools available to help them keep on top of their credit balance. After a year, 85% said their IHD was still plugged in and in-use.⁷¹

“Having the smart meter and having the app as well, it does make me feel more in control.” (Female, 25-34, prepayment consumer, working full time, private renter)⁷²

⁶⁷ See Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018); Creative Research, Smart Metering Early Learning Project: Prepayment Qualitative Research (DECC, 2015); Citizens Advice, Early consumer experiences of smart meters (Citizens Advice, 2016); UK Power Networks, Energywise project (UK Power Networks, 2018).

⁶⁸ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁶⁹ BEIS, Framework for the provision of post installation support, (NEA, 2018):

<https://www.nea.org.uk/smartenergygb/consumer-reference-group/>

⁷⁰ Ofgem, Consultation on Revisions to Social Obligations Reporting (Ofgem, 2018):

<https://www.ofgem.gov.uk/publications-and-updates/consultation-revisions-social-obligations-reporting>

⁷¹ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁷² Ibid.

Self-disconnection happens when a consumer with a prepayment meter does not have enough money to top-up and their meter cuts out or when they do not realise that credit on the meter is running out. Closely associated with self-disconnection is self-rationing. This is when a prepayment consumer who is in a financially vulnerable position may deliberately limit their energy use to save money or restrict spending in other areas to pay their energy bills.⁷³ Most recent data from Citizens Advice in 2017 shows that 16% of consumers with a prepayment meter ran out of credit at least once in the last year and that the main reasons for this were forgetting to top-up (47%) or not realising that their meter was low on credit (32%).⁷⁴

As with traditional prepayment, where self-disconnection happens or is likely to happen, suppliers can offer consumers with smart meters short-term support to get back onto or to remain on supply. This support includes emergency and friendly credit⁷⁵ which are significantly easier to access for smart meters as they can be activated and the credit viewed via the IHD (or often via an app, if available).

In 2017, Ofgem began collecting information on smart prepayment functions that help consumers to manage their bills and protect against self-disconnection. In 2018 they found that:

- all suppliers with customers on smart prepayment meters offer emergency credit. Most offer £5 or £10 and the customer pays this back the next time they top-up;
- all suppliers offering smart prepayment provide friendly credit during evenings/night-time, weekends and bank holidays allowing customers to have a continuous supply. This is an improvement on 2016 when one supplier didn't offer friendly credit on bank holidays.
- Most suppliers (15 out of 17) installing smart meters offered low credit alerts through the IHD. Eight suppliers offered high consumption alerts via the IHD.⁷⁶

⁷³ Ofgem, Vulnerable Consumers in the Energy Market 2018 (Ofgem, 2018):

https://www.ofgem.gov.uk/system/files/docs/2018/11/vulnerability_report_2018.pdf

⁷⁴ Citizens Advice, Switched On – Improving support for prepayment consumers who've self-disconnected (Citizens Advice, 2018):

<https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/improving-support-for-prepay-customers-self-disconnecting/>

⁷⁵ Emergency Credit (EC) when a consumer's credit balance is low, they are given the option of using emergency credit which is an amount, typically between £5 and £10 that they can use before their supply is cut off. When they then top-up, this amount is deducted from their top-up amount, Friendly credit is an extension to EC which can be offered by suppliers which means the supply will not be cut off during the night or on Sundays or Bank holidays, consumers usually have until 10am the next day to top-up.

⁷⁶ Ofgem, Vulnerable Consumers in the Energy Market 2018 (Ofgem, 2018):

https://www.ofgem.gov.uk/system/files/docs/2018/11/vulnerability_report_2018.pdf

In qualitative research, some consumers have reported that being able to more easily see their balance and top-up means they use emergency credit or self-disconnect less often.⁷⁷

Researcher: *“So what’s your experience been of using Emergency credit?...”*

Participant: *“...I haven’t had to use it on this [meter]...”*

Researcher: *“...You haven’t? No, okay. What about in the past when you were with [energy company without a smart meter]?...”*

Participant: *“...Yes, we used it all the time.”*

(Smart Prepayment Depth)⁷⁸

Smart meters also provide energy suppliers with opportunities to offer support to consumers who may be in more challenging financial situations or prone to disconnection. Data from smart meters may enable earlier intervention, to discuss appropriate support and reduce the risk of debt build-up or repeated self-disconnection. Smart meters may also enable suppliers to get consumers back on supply quickly. For example, during the “Beast from the East” in 2018, an energy supplier used smart meter data to identify all of its prepayment customers who were off-supply and gave them an automatic £16 credit on their gas meter. They did not wait for customers to call them as they did not want to risk their being off-supply and unable to heat their homes in such low temperatures. This would not have been possible with traditional prepayment meters.

While the potential for energy savings may be lower for prepayment consumers, who are more likely to already be closely monitoring their expenditure, research undertaken by the Centre for Sustainable Energy found that a third of prepayment households reported reduced electricity costs following the switch to smart meters.⁷⁹ Reasons included the availability of cheaper tariffs and increased awareness of their energy use. Also, BEIS’ 2017 Customer Experience Study found that prepayment customers were slightly more likely than credit customers to say that their smart meter had made a difference to how they use energy (68% compared to 62%).⁸⁰

Moving between prepayment and credit

Under traditional metering, if a consumer with a credit meter wants to switch to prepayment, a new meter must be installed. With smart meters this should no longer be the case. Energy suppliers can remotely switch the payment method so that the meter can operate in either credit or prepayment mode. Switching payment method is therefore quicker and easier, saving consumers time and money.

⁷⁷ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

⁷⁸ Ibid.

⁷⁹ CSE, Smart Prepayment and Fuel Poverty: A report for Eaga charitable Trust (Eaga CT, October 2016):

<https://www.eagacharitabletrust.org/understanding-the-impact-of-smart-prepayment-on-fuel-poverty/>

⁸⁰ Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>

It is vitally important that energy suppliers can only switch payment modes if it is safe and reasonably practical for their customer to use prepayment. Safeguards are therefore in place which mean that suppliers can only switch mode if they meet specific regulatory obligations, including ensuring that it is safe and appropriate for their customer to use prepayment.⁸¹

⁸¹ The 'safe and reasonably practical' obligation is established in SLC 28 and the associated guidance is available here: https://www.ofgem.gov.uk/system/files/docs/2016/03/open_letter_-_authoritys_decision_to_modify_the_safe_and_reasonably_practicable_guidance_-_final.pdf



Case Study - Elspeth, Drumchapel



Elspeth's smart meter means that she no longer needs to struggle with accessing her prepayment gas and electricity meters to top them up. Elspeth, a local councillor, lives with her husband and two grown-up daughters in a house in Drumchapel, a suburb of Glasgow.

"We've always had prepayment meters – they're really useful in managing energy costs and mean that you don't get any unexpected bills. However, we've always found reading them and topping them up to be a pain, so when we first heard about the benefits of smart meters from our energy supplier, we were really keen to get one.

Our gas meter is located outside, on the ground. Before we got our smart meter installed I would have to get down on my hands and knees to read it or to top the meter up – this was particularly difficult as I suffer from a frozen shoulder, which made it tricky to put the card into the meter. Our electricity meter is buried in a cupboard under mountains of things, with tables, chairs and an ironing board stored in front of it. Topping it up meant having to move everything out of the way, and then putting it all back again – not what you need when you're working full time and often in a hurry.

Now that we have a smart meter I can easily see how much energy we're using in pounds and pence on the in-home-display, which sits next to the sofa, and I can also top up the credit online, so we never have to access the actual meters anymore.

The display has been particularly useful in encouraging my daughters to be more conscious of the energy we use. They know that they can't put the heating on if the temperature is 22 degrees or above and I've shortened the length of their showers after seeing how much energy they use.

When we had our old meters, I was always forgetting to take the key or card to the shop to get them topped up, and we often ran out of credit at inconvenient times – once I was making a pair of curtains on my sewing machine and the electricity ran out. I really needed to get them finished that night and having to go to the shop to top up wasted precious time. Now, our smart meter warns us when we are close to running out of credit, and I can see at a glance how much we have left. Plus, I can top up from home, whenever I need to.

It's saved us money too – if the light on the in-home display turns orange then we check all our appliances to see whether they actually need to be on. And being more conscious of our energy use since getting a smart meter has reduced the money we spend on electricity from £80 a month to £60 a month.

I'd recommend that everyone on a prepay meter upgrades to a smart meter – they give you all the best bits of prepay without the hassle, and they can save you a fair amount of money.

"I'd recommend that everyone on a prepay meter upgrades to a smart meter – they give you all the best bits of prepay without the hassle, and they can save you a fair amount of money."

Future direction

Energy suppliers are currently working with industry to ensure a smooth and timely transition to the roll-out of SMETS2 prepayment meters. It's important that we take time to get this right for these consumers, who are often more vulnerable. As industry confidence grows we expect energy suppliers will look to explore ways to prioritise their prepayment customers so that they can realise the significant benefits of having a smart meter.

Chapter 5 - Engagement in the Energy Market

'Smart meters will allow consumers to play a more active role in the energy market and make related cost and carbon savings. Consumers will be able to switch more easily between suppliers....The smart metering system will enable simplified and improved industry processes. For example, accurate data and improved industry data flows and management systems will enable suppliers to radically simplify and improve the speed and efficiency of customer processes. This will include switching supplier, moving home, bill queries, debt management and tariff changes. Both suppliers and their customers will benefit from an end to estimated bills and site visits to obtain meter readings, as well as the improvement in the ability to detect electricity outages or potential fraud.'

Smart Metering Prospectus, 2010

Background

The replacement of traditional gas and electricity meters with smart meters is an essential energy infrastructure upgrade for Great Britain that will help make our energy system cheaper, more efficient and reliable.

The roll-out of smart meters is a critical component of a wider set of changes to the energy market designed to transform how consumers engage with this market. Smart meters are enabling suppliers to offer new products and services, including smart tariffs allowing consumers to save money by using energy at different times of the day. The Smart Systems and Flexibility Plan⁸², published jointly by Government and Ofgem in 2017 (and Progress Update in 2018), set out a number of actions that we are taking to enable smart homes. This includes the roll-out of market-wide half-hourly settlement, which will incentivise suppliers to offer smart tariffs by exposing them to the true cost of energy and taking powers to support the uptake of smart appliances – such as washing machines and heating systems that respond automatically to price signals. These wider changes also include Ofgem's Switching Programme, which aims to strengthen competition in the energy market by delivering faster, more reliable switching for consumers.⁸³

⁸² BEIS, Upgrading our system: Smart Systems and Flexibility Plan (BEIS, 2017):

<https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan>

⁸³ Ofgem, Switching Programme: Full Business Case (Ofgem, 2019):

https://www.ofgem.gov.uk/system/files/docs/2019/05/switching_programme_full_business_case.pdf

Progress to date

Switching supplier

An indicator of market engagement is consumer switching. The latest data from Ofgem's annual Consumer Engagement Survey suggests that only two in five consumers are engaged⁸⁴, defined as having switched supplier, changed tariff or compared tariff with their own or other suppliers in the past 12 months. As the cost of energy becomes more visible on their IHD, consumers should become more likely to compare tariffs and switch either tariff or supplier to make sure they are paying a competitive price for their energy.

It is important to acknowledge that the foundation stage of the roll-out, using first generation SMETS1 meters, has meant that some consumers have had to choose between retaining their smart services or moving to cheaper tariffs with other suppliers who temporarily aren't able to operate their first generation meter in smart mode. While this issue will fall away when SMETS1 meters are enrolled into the national smart metering communications infrastructure run by the DCC,⁸⁵ concerns have been raised suggesting that customers will be put off switching while there is a risk that they could lose some smart services.⁸⁶

Ofgem's Consumer Engagement Survey provides some reassurance that smart consumers are not stopping switching because of interoperability concerns. The 2018 report noted that households with a smart meter are in fact slightly more likely to have switched supplier in the past 12 months than households without a smart meter (22% vs 18%).⁸⁷

The escalation of the SMETS2 meter roll-out, (which are interoperable from the start) removes this potential hurdle and enables more efficient switching system, delivering benefits for both consumers and suppliers.

Industry information from the Data Communications Company (DCC) show that as of the end of March 2019, there were just over 630,000 gas and electricity domestic SMETS2 meters connected to the system. This has increased from 240,000 at the end of December 2018. The DCC reported that the millionth SMETS2 meter connected to their system in May 2019.

⁸⁴ Ofgem, Consumer Engagement Survey 2018 (Ofgem, 2018): <https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2018>

⁸⁵ Government defined a standard for first generation meters, known as 'SMETS1', to stop the variability in the smart-type meters which some energy suppliers were already installing at that time to ensure minimum common functionality. This was important for ensuring consumers had a consistent experience and to ensure that these meters could later be enrolled into the national smart metering communications infrastructure and made interoperable. Due to SMETS1 meters working on a number of separate data and communications systems, when a consumer switches energy supplier, their meter can lose smart functionality if the new supplier cannot communicate it. This issue will be solved when SMETS1 meters are enrolled into the national smart metering communications infrastructure run by the DCC. SMETS2 meters are second generation meters. For SMETS2 meters, a national smart metering communications infrastructure built by the DCC enables communications between all energy suppliers, network operators, other authorised service users and the meter. This means SMETS2 meters will be fully interoperable between all energy suppliers.

⁸⁶ NAO, Rolling out smart meters (NAO, 2018): <https://www.nao.org.uk/report/rolling-out-smart-meters/>

⁸⁷ Ofgem, Consumer Engagement Survey 2018 (Ofgem, 2018): <https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2018>

Automated switching

We are beginning to see the emergence of services that compare consumers' smart meter data with information about tariffs from a wide range of energy suppliers across the market to automatically switch the consumer to the cheapest deal available to them. Using smart meter data which captures energy consumption in half-hourly intervals, these services gain a highly accurate estimate of future energy consumption maximising the likelihood that consumers will be switched to the cheapest deal on the market. This not only benefits consumers by saving them money, but also creates an incentive for suppliers to reduce costs to offer lower prices.

Estimated bills, bill queries and remote meter reads

Switching supplier is only one aspect of consumer engagement in the energy market. Consumers with smart meters are already benefiting from an end to estimated bills, reduced queries to their supplier and no longer needing to regularly submit meter readings. BEIS collects energy supplier data annually on the number of inbound contacts from smart meter consumers, which confirms that they are contacting their suppliers less often than customers with traditional meters. Latest figures show a more than fifty per cent reduction in consumers contacting their suppliers for billing queries.

Similarly, we look at how many smart meter consumers receive estimated bills to confirm that the smart billing systems are working as intended. Over the past couple of years, the vast majority of smart meter bills have been based on smart meter readings.

Non-domestic engagement in the energy market

In 2017 BEIS published a large-scale, in-depth qualitative study of non-domestic sites⁸⁸ involving 41 case studies, most of which had smart meters installed.⁸⁹ Case studies across multiple segments cited remote meter readings and accurate billing as reasons for installation and benefits of their smart meters. Some chains were using data to monitor usage across outlets. Case studies across segments indicated that data could be used to measure the impacts of energy efficiency measures or investments.

However, the research also found that lack of awareness of smart meter data, access and 'know how' can be a barrier to non-domestic benefits realisation and that engagement with energy efficiency and smart meter data varied by non-domestic organisational type, size, energy intensity and sector. Despite this, certain 'segments' of the population had commonalities which suggested that a tailored approach to non-domestic smart meter benefits realisation and consumer engagement may be effective. In particular:

- customer facing chains often have specialist energy staff and an energy strategy. This makes engagement with smart meter data more likely, but there is still potential for greater engagement and savings;

⁸⁸ Creative Research, Smart metering in non-domestic premises: early research findings (BEIS, 2017): <https://www.gov.uk/government/publications/smart-metering-in-non-domestic-premises-early-research-findings>

⁸⁹ Creative Research, Smart metering in non-domestic premises: early research findings (BEIS, 2017): <https://www.gov.uk/government/publications/smart-metering-in-non-domestic-premises-early-research-findings>

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- use of smart meter data in schools varies, but is associated with supportive staff/governors, access to expertise and staff commitment; and
 - independents and smaller organisations rarely have dedicated energy staff and experience a lack of time and energy expertise, making engagement with smart meter data more challenging.

As a result of these findings, a sector-based consumer engagement approach for non-domestic benefits realisation was developed. Sector Leads within the BEIS Programme Team have been appointed to drive engagement in the retail, hospitality and schools sectors, aligning with those sectors targeted by the Non-Domestic Smart Energy Management Innovation Competition (NDSEMIC). These sectors were chosen because they represent a significant proportion of the number of sites and energy consumption of the total non-domestic roll-out and due to their potential for engagement at a practical level. Examples of tailored engagement activities have ranged from targeted events and bi-laterals with industry to the development of case study material, trade press and a growing sector-based evidence base. It is envisaged that the sectoral engagement team will also collaborate with Smart Energy GB as their remit towards microbusinesses is extended to share learnings around effective forms of business engagement.

Future direction

The enrolment of SMETS1 meters into the Data and Communication Company (DCC) is a longstanding policy commitment. Government has announced that DCC is required to offer an enrolment service for 99% of installed SMETS1 meters.⁹⁰ Energy suppliers are required to take all reasonable steps to enrol 'eligible SMETS1 meters' into the DCC, within 12 months of the point at which they can be enrolled or take all reasonable steps to replace any SMETS1 meter which is not enrolled with a SMETS2 meter by the end of 2020. The importance of an interoperable system was a driver in the Government's SMETS1 end date decision to deliver cost savings and efficiencies from smart interoperable systems and switching opportunities.⁹¹ We will continue to monitor switching and consumer experiences of smart meters as we transition to a fully interoperable system. BEIS and Ofgem are working to ensure that the various change programmes, including market-wide half-hourly settlement, smart meter roll-out and the faster, more reliable switching programme, are aligned and do not place conflicting requirements on industry parties.

⁹⁰ BEIS, Enrolment of SMETS1 meter cohorts with the Data Communications Company (BEIS, 2018): <https://www.gov.uk/government/consultations/enrolment-of-smets1-meter-cohorts-with-the-data-communications-company>

⁹¹ BEIS, BEIS Response to Consultation on SMETS1 End Date (Smart Energy Code Company, 2018): <https://smartenergycodecompany.co.uk/latest-news/beis-response-to-consultation-on-smets1-end-date/>

Chapter 6 - Consumer Protection

'Consumers' interests and benefits will be at the heart of smart metering delivery and consumer protections will need to keep pace with technological change. Vulnerable consumers will need to be protected and the privacy of consumer data assured.'

Smart Metering Prospectus 2010

Background

The Programme has adopted an 'inclusive by design' approach to the roll-out of smart meters, taking steps to ensure that the needs of consumers in vulnerable situations are met and eliminating barriers to them realising the full benefits of smart metering.

Smart metering results in a step change in the volume and granularity of energy consumption data that is available about gas and electricity use. This gives consumers near real-time information on their energy use, providing reassurance and certainty about the cost of bills. Energy suppliers have access to accurate data for billing and to improve their customer service, while network operators will be able to use energy consumption information to manage reinforcement activity and make efficient investment decisions. Access to energy consumption information by third parties, with consumer consent, will also support the ongoing development of a wider energy services market.

Progress to date

Supporting vulnerable consumers

Research

The benefits of smart metering can be particularly significant for vulnerable consumers; the end of estimated billing and automated readings give peace of mind, while easy access to accurate information on energy use supports improved budgeting and may also enable 'comfort taking' behaviours.⁹² Research undertaken early in the Programme supported this position, with the Energy Demand Research Project (EDRP) finding, for example, that households in areas with a high propensity for fuel poverty can benefit from smart meters at least as much as other households in terms of energy saving.⁹³ As part of its Consumer

⁹² Where consumers are able to make an informed decision to change or increase their energy use in ways that improve personal warmth or support wider needs.

⁹³ AECOM, Energy Demand Research Project: Final Analysis, (Ofgem, 2011):

<https://www.ofgem.gov.uk/gas/retail-market/metering/transition-smart-meters/energy-demand-research-project>

Engagement Strategy,⁹⁴ the Programme subsequently adopted an objective to ensure that vulnerable, low income and prepayment consumers can benefit from the roll-out.

To improve understanding of vulnerable consumer experiences and to ensure that their needs are met, government commissioned National Energy Action (NEA) and Consumer Focus (now part of Citizens Advice) to undertake research and present recommendations. The ‘Smart for All’ research considered a number of areas, including the provision of information to consumers and the demonstration of the IHD, while also reviewing consumer understanding after the installation.⁹⁵ The findings from this project highlighted that vulnerable consumers are likely to require additional support, tailored to their needs, to realise the full benefits of smart metering.

The validity of those recommendations was confirmed by BEIS research undertaken early in the roll-out that found that some vulnerable consumers, including those aged over 65, will likely need further support if they are to realise the full benefits of smart metering and make full use of their IHD.⁹⁶ The importance of tailored, and in some cases additional, support for vulnerable consumers was also a finding of NEA’s SMART-UP research which found that enhanced support enabled consumers to improve their understanding and engagement with their smart meter and IHD.⁹⁷ The project concluded that providing tailored advice in a variety of formats, alongside the installation of smart meters, can enable and empower vulnerable consumers to take control of their energy use.

Other research has also highlighted that a focus on energy reduction is not always appropriate where consumers are living in vulnerable situations, and there is a risk that reducing energy consumption in these circumstances could negatively impact the consumer’s health or wellbeing. Smart meters may help give consumers the confidence to use the energy they need, by enabling them to easily keep track of the cost of their usage. Providing greater visibility of energy use may also support consumers to make savings in one area, through greater efficiency, which can then be used to support comfort taking in others. Whilst the cost of energy may remain the same for these consumers, the focus on comfort provides clear benefits. A study undertaken by the Centre for Sustainable Energy, on behalf of the Joseph Rowntree Foundation, found that consumers with long term health conditions or arthritis

⁹⁴ DECC, Smart Meter Consumer Engagement Strategy (DECC, 2012):

<https://www.gov.uk/government/consultations/smart-meter-consumer-engagement-strategy>

⁹⁵ NEA and RS Consulting, Smart for all: understanding consumer vulnerability during the experience of smart meter installation (DECC, 2013): <https://www.gov.uk/government/publications/smart-for-all-understanding-consumer-vulnerability-during-the-experience-of-smart-meter-installation>

⁹⁶ DECC, Smart Metering Early Learning Project (DECC, 2015):

<https://www.gov.uk/government/publications/smart-metering-early-learning-project-and-small-scale-behaviour-trials>

⁹⁷ NEA, Smart-Up: Vulnerable consumer empowerment in a smart meter world (NEA, 2018):

<https://www.nea.org.uk/smart-up/>

reported reduced levels of worry about their energy bills following the installation of a smart meter and the provision of relevant, tailored, advice.⁹⁸

Progress

To ensure that vulnerable consumers are identified and their needs taken into account, a number of specific provisions, informed by this research, were introduced as the Programme was developed.

Energy suppliers must comply with the Smart Metering Installation Code of Practice (SMICoP) when installing smart meters.⁹⁹ This requires them to take all reasonable steps to identify vulnerable consumers and take the needs of these consumers into account. Energy suppliers are also required to ensure that they offer IHDs that meet accessibility needs, including for consumers with impaired sight, dexterity and memory. A number of IHD manufacturers are developing versions of their IHDs that meet accessibility needs. This includes an Accessible In-Home Display (AIHD) for blind and partially sighted customers that has been developed in partnership between EUK, the Royal National Institute of Blind People (RNIB) and geo. A number of suppliers have acquired this AIHD to supply to customers as required.

Smart Energy GB has an explicit objective to assist consumers with low incomes and those who may face additional barriers in being able to realise the benefits of smart metering. As part of this work, Smart Energy GB runs a partnership programme, delivered by National Energy Action (NEA) and Energy Action Scotland (EAS), focused on raising awareness and understanding of smart meters amongst harder to reach audiences. In 2019 the grant funding and support available through the Smart Energy GB 'In Communities' programme is targeted at partners who reach people over the age of 65. These consumers have been identified as requiring further support and information about smart metering and how to realise the benefits. This work builds on a programme of activity undertaken in 2018, designed to support people over the age of 60 with no personal internet access or over the age of 65, those on a low income and individuals who are severely and profoundly D/deaf.

In 2018, 54 partner organisations were engaged and delivered activities to support consumers in target groups, 774 smart meter Champions from regional and local organisations received training and 137 small grants were awarded to stimulate engagement and activity at a local level.¹⁰⁰

⁹⁸ CSE, Supporting vulnerable consumers to benefit from their smart meters: a report to Joseph Rowntree Foundation (CSE, 2018): <https://www.cse.org.uk/projects/view/1353>

⁹⁹ Smart Metering Installation Code of Practice: <http://www.smicop.co.uk/SitePages/Home.aspx>

¹⁰⁰ Further information on the Smart Energy GB In Communities programme can be found here: <https://www.nea.org.uk/smartenergygb/>

Figure 5 - Photos from Cardiff Deaf Centre showing some of their smart meter activities provided by NEA



Recognising that some consumers may also benefit from support post-installation, in 2017 the Department also worked with industry and consumer groups to develop a framework that suppliers can follow to provide further support to vulnerable and prepayment consumers.¹⁰¹ This includes ensuring that all consumers are provided with information after installation, signposting them to sources of support. Where consumers are identified as requiring further assistance, suppliers will ensure that a dedicated point of contact is available and that relationships are established with local and community providers of support.

Recent research suggests these efforts are paying off. The Department's 2017 Customer Experience Study found that the experiences of those groups who are more likely to be in vulnerable circumstances were broadly consistent with those of non-vulnerable consumers, and in some cases were better. For example, low income groups were generally more

¹⁰¹ Available here: <https://www.nea.org.uk/smartenergygb/consumer-reference-group/>

satisfied¹⁰² with the supporting materials provided alongside the installation and social renters showed higher levels of satisfaction with their smart meters a year after installation.¹⁰³

However, the study also identified some groups as requiring further support on how to realise benefits. Consumers aged over 65, for example, were less likely to recall being given a full demonstration of their IHD and whilst they were more likely to say they were satisfied with the energy efficiency advice they received, they were less likely to say that their understanding of their energy use had improved.¹⁰⁴

Safeguarding data privacy

To support innovation in the energy services market while safeguarding consumer privacy, government established a smart metering Data Access and Privacy Framework in 2012.¹⁰⁵ The provisions of this Framework were reviewed in 2018 and the conclusions published in the same year.¹⁰⁶

Overall, levels of consumer concern regarding privacy in relation to smart metering remain low. Regular public attitude tracking undertaken on behalf of Smart Energy GB shows consistently low levels of concern, with only 5% of those surveyed in the most recent report raising privacy as an issue.¹⁰⁷ These results were supported by the BEIS Smart Meter Customer Experience Study, which found that 2% of survey respondents cited data privacy as a concern. Significantly, research undertaken on behalf of Citizens Advice found that most consumers (60%) who had expressed concern felt reassured when the provisions of the Framework were explained.¹⁰⁸ The evidence available suggests that where consumers understand the provisions of the Framework and are engaged by their energy supplier, they are generally reassured and do not have significant concerns about data privacy.

¹⁰² See: Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018):

<https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>.

Consumers with incomes lower than £16,000 were more satisfied than higher income groups (81% vs. 75% for those with an income over £30,000).

¹⁰³ Social renters were more satisfied a year after installation (84% vs. 72% for owner-occupiers)

¹⁰⁴ 65+ age group were: less likely to recall being shown through each screen of the IHD (72% vs. 77% average); more satisfied than lower age groups with energy efficiency advice (83% vs. 74% for 18-34 and 77% for 45-59); and less likely to say their understanding of their energy use had improved (43% vs. 62% for those below 45 years old, or 57% of those below 65 years).

¹⁰⁵ DECC, Data Access and Privacy Framework (DECC, 2012):

<https://www.gov.uk/government/consultations/smart-meter-data-access-and-privacy>

¹⁰⁶ BEIS, Smart Metering Implementation Programme: Review of the Data Access and Privacy Framework (BEIS, 2018): <https://www.gov.uk/government/publications/smart-metering-implementation-programme-review-of-the-data-access-and-privacy-framework>

¹⁰⁷ Smart Energy GB, Smart Energy Outlook (Smart Energy GB, March 2019):

<https://www.smartenergygb.org/en/-/media/SmartEnergy/essential-documents/press-resources/Documents/Smart-energy-outlook-March-2019.ashx>

¹⁰⁸ Citizens Advice, Early consumer experiences of smart meters (Citizens Advice, 2018):

<https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/early-consumer-experiences-of-smart-meters-2018/>

Although low numbers of consumers are concerned about their smart meter data, levels of awareness about how data will be accessed are also low, with some consumers saying that they would like to receive more information.¹⁰⁹ While examples of good practice exist across the industry, the review found that there is significant variation in the extent to which the information provided to consumers on data access is engaging, accessible and capable of being recalled. Forthcoming research from Citizens Advice has found that most consumers can be reassured about sharing their smart meter data by clear communications, reminders and easy to use data control options.

¹⁰⁹ BEIS' 2017 Smart Meter Customer Experience Study found that around 36% of respondents wanted to know more about who can access their smart metering data and for what purposes: Ipsos MORI, 2017 Smart Meter Customer Experience Study (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>



Case Study - Pat, Leeds



Pat lives with her partner in a one-bed flat in Leeds which she rents from the council. Pat loves her smart meter because it just makes her life that little bit easier by sending automatic meter readings to her energy supplier and giving her visibility of her energy use.

"I had my smart meter installed about a year ago and I have to say I've had no problems with it, it's just been brilliant. My installer took me through how to use my in-home display and it's really easy – and that's from someone who isn't great with instructions! It's only a little thing, so I just keep it in the kitchen and I can glance at it when I walk past.

We're always budgeting for outgoings such as energy and this is made so much easier by using our smart meter to keep a close eye on how much we're spending and to see the areas where we might be able to cut down and save a bit on our energy bills. Being able to see my near real-time and monthly balance gives me the transparency over my energy use that I didn't have before. For example, I've always been adamant that I would never scrimp on heating, it's something that's very important to me. But instead of my smart meter making me concerned about how much my heating costs me, it's actually just been really reassuring to be able to keep an eye on things. On the other hand, seeing my near real-time energy balance has definitely highlighted places that I know we can cut down – for example, where possible we now try to hang out the washing rather than tumble dry it.

For me, the best thing by far about my smart meter is automatic meter readings. My gas meter is located in quite an inconvenient place below the sink, and before I had my smart meter I used to have to get down there and move everything out of the way to access my meter. It might not seem like a big deal to some people, but I've got health problems that restrict me bending down so taking a meter reading was such a nightmare. Now my smart meter sends automatic readings to my supplier, so not only do I not have to get to the back of the sink, I also know I'll always have an accurate bill and won't be paying for energy I haven't used.

Having a smart meter has also meant that my supplier has been able to advise which tariff is best for me to be on, based on my actual usage. They recommend which they think would suit my usage and will save me money, and I can then make an informed decision based on the energy I know I'm using. Honestly, having a smart meter just makes my life so much easier."

"I've always been adamant that I would never scrimp on heating, it's something that's very important to me. But instead of my smart meter making me concerned about how much my heating costs me, it's actually just been really reassuring to be able to keep an eye on things."

Future direction

While the evidence available to date suggests that the experiences of those groups who are more likely to be in vulnerable circumstances are broadly consistent with those of non-vulnerable consumers, it also suggests some vulnerable consumers will likely need further support if they are to realise the full benefits of smart metering. The 2018 NAO report on the roll-out noted that ‘the Department has established a good practice guide for supporting vulnerable consumers’ and the Programme was encouraged to hear Energy UK confirm¹¹⁰ that all their members have signed up to the principles developed for post-installation support. The NAO report noted however that in practice there was variable support for vulnerable consumers across suppliers.¹¹¹ The Programme will therefore continue to work with industry and consumer groups to ensure appropriate support is in place for vulnerable and prepayment consumers, and work with Ofgem to ensure that all consumer protection requirements are met.

The Programme also notes NEA’s ‘SMART-UP’ research findings that while smart meters can assist vulnerable consumers, they don’t necessarily resolve the precariousness of their financial situation or improve the efficiency of their properties. This highlights the importance of co-ordinated activity between the Programme and other government initiatives and we will continue to work closely across government to tackle these issues. This includes engaging with Ofgem as they review their Consumer Vulnerability Strategy.¹¹²

The review of the Data Access and Privacy Framework concluded that appropriate provisions are in place to protect consumers but also identified opportunities to promote the sharing of good practice in relation to communications to customers regarding data access choices, supporting tenants and landlords and managing change of tenancy situations. We are currently progressing this work, in conjunction with energy suppliers and consumer groups, through the Programme’s Consumer Reference Group.

Smart metering energy consumption data has the potential to support innovation and provide a platform for the transition to a smarter energy system (see Chapter 10). Further evidence on the effectiveness of the Data Access and Privacy Framework is likely to become available as understanding and engagement with it increases. While we do not anticipate that a further standalone review of the Framework will be necessary, consideration of data access and privacy will be incorporated into ongoing monitoring of the smart metering regulatory framework to ensure that appropriate consumer protections remain in place while enabling innovation.

¹¹⁰ House of Commons, Business Energy and Industrial Strategy Committee, Oral Evidence, Rolling out smart meters HC1851: <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/business-energy-and-industrial-strategy-committee/rolling-out-smart-meters/oral/94877.html>

¹¹¹ NAO, Rolling out smart meters (NAO, 2018): <https://www.nao.org.uk/report/rolling-out-smart-meters/>

¹¹² Ofgem, Draft Consumer Vulnerability Strategy 2025 (Ofgem, 2019): <https://www.ofgem.gov.uk/about-us/how-we-work/working-consumers/protecting-and-empowering-consumers-vulnerable-situations/consumer-vulnerability-strategy>

Chapter 7 - Distribution and Safety Benefits

'Subject to appropriate consumer permissions and protections, smart metering data will enable network operators to make better informed investment decisions and will support network operators to develop "smart grids", using the data to plan and manage the distribution and transmission systems so as to reduce costs, losses and outages.'

Smart Metering Prospectus 2010

Background

Smart meters will play a significant role in helping to improve the efficiency of energy distribution in the UK through the generation of valuable data that will help identify weaknesses in the network and guide better investment decisions. The availability of this data provides direct benefits to consumers, for example in the event of a power cut, smart meters will send Electricity Distribution Network Operators (DNOs) automatic alerts, enabling them to respond more quickly and avoiding the need for consumers to report the outage. The granular, near real-time information available from smart meters will enable distribution networks to develop an accurate picture of our energy use and generation and help ensure that the challenges of maintaining the integrity of a low carbon energy system are met.

Smart meters are replacing old gas and electricity meters across Great Britain. The scale of the Programme means that meters are being replaced at a much faster rate than they would have been otherwise. This is leading to the earlier detection and resolution of potentially dangerous appliances and network assets, helping to protect and improve consumer safety.

Progress to date

Network benefits

All Electricity DNOs have now put in place systems and processes that will allow them to utilise the functionality and data provided by smart meters to improve the service they provide to consumers. For example, DNOs will receive an alert informing them when a meter and therefore a consumer, has lost power. These alerts, particularly those that affect small numbers of properties, will enable DNOs to respond more quickly as they will be less reliant on consumers advising them by phone. DNOs will also be alerted to outages that otherwise may have remained unreported, thereby minimising the impact of a lack of heating or refrigeration for a sustained period of time.

Similarly, the data provided by smart meters enables DNOs to provide other benefits to consumers through better informed investment decisions. For example, DNOs will use advanced systems management software to analyse consumption data from smart meters to accurately understand the electricity loading on different parts of their networks. This will allow them to identify and optimise their use of existing network capacity, through active network

management, to defer costly reinforcement activities and more efficiently target investment where it is required.

Similarly, smart meters will allow DNOs to better understand the scale of microgeneration taking place in domestic premises and enable energy stored in batteries to potentially be exported back to the Grid when demand peaks.

At present, the focus is largely on electricity networks, because evidence to date suggests that a high concentration of meters is required for the gas networks (GDNs) to receive significant benefits. However, this may change as smart meter data will enable GDNs to better understand future demand requirements, notably for domestic heating as innovations such as electric heat pumps are introduced on a wider scale.

Safety benefits

The Gas Safe Register estimates that as many as one in six homes has a dangerous gas appliance.¹¹³ Under gas safety regulations, gas engineers carrying out any gas work – and this includes installing a smart (or traditional) gas meter - who become aware of a gas appliance that cannot be used without constituting a danger are required to take all reasonable steps to inform the consumer.¹¹⁴ Minimum checks to enable compliance with regulations include engineers being required to carry out visual safety checks of gas appliances when working on gas installations.¹¹⁵ The gas engineer will check for signs of distress (e.g. discoloration, evidence of heat damage), the stability of the appliance and to confirm if the location, flueing and ventilation are suitable. This will help enable them to identify signs of spillage, evidence of poor or incomplete combustion and to consider whether the general condition of the gas appliance is appropriate. In the case of electricity – meter installers may alert customers to issues with their consumer units, inadequate earthing, equipment that is damaged or in poor condition, or unsafe electrical appliances. If an unsafe situation is identified or is suspected, they are required to complete and issue relevant warning notices and labels.

Over the course of 2018, over 200,000 gas and electricity safety notices were issued by energy suppliers to consumers during meter installation visits, alerting them to unsafe gas appliances or electricity issues (wiring, consumer units etc) within their homes.

The smart meter roll-out also provides an opportunity for network defects (both electricity and gas) to be identified during the installation process. These may include inoperable Emergency Control Valves (ECVs), exposed live conductors, inadequate earthing, damaged equipment or issues with the fuse. Some of these defects are potentially dangerous and may otherwise have gone undetected for many years under standard meter replacement arrangements. Installers have a 'duty of co-operation' which requires them to liaise with other parties (e.g. network operators) involved with the safe and secure supply of gas or electricity to premises.¹¹⁶ Over

¹¹³ Gas Safe Register: <https://www.staygassafe.co.uk/>

¹¹⁴ Gas Safety (Installation and use) Regulations 1998:
<http://www.legislation.gov.uk/ukxi/1998/2451/contents/made>

¹¹⁵ IGEM, Gas Industry Unsafe Situations Procedure (IGEM, 2018):
<https://www.gassaferegister.co.uk/media/2622/igem-g-11-gas-industry-unsafe-situations-procedure-april-2018-amendments.pdf>

¹¹⁶ Under the [Meter Asset Managers Code of Practice \(MAMCOP\)](#) (for gas) and [The Meter Operation Code of Practice Agreement \(MOCOPA\)](#) (for electricity)

the course of 2018, 170,000 pre-existing (gas and electricity) network related issues were identified during installation visits, notified and subsequently resolved by the gas and electricity networks helping to protect and improve safety of network assets in consumer's homes.

In total, this represents 370,000 safety benefits associated with meter installations, the vast majority of which were for smart meters.

Furthermore, there are also more generalised benefits that have been identified over the course of the Programme:

- Industry collaboration - the Programme has brought industry parties together via governance groups which has improved collaboration across industry. Key outputs from safety related groups include improved (quicker) processes, communications and quality of reporting of dangerous occurrences followed by industry wide actions and lessons learnt off the back of these incidents:
 - a monitoring regime was set up to track safety incidents, providing for the first time a comprehensive industry view of safety incidents and prompting industry wide actions to be taken to reduce them;
 - an escalations list has been set up that gives suppliers and network operators direct contact details of other industry stakeholders to ensure rapid action/communication of serious safety incidents between parties, enabling prompt investigations to take place and lessons learnt to be fed back more generally as required.
- Priority Services Register (PSR) – The number of customers receiving contact from their supplier as a result of the Smart Metering Programme is helping to identify consumers that would benefit from being on the PSR.

Future direction

Safety is a priority for the Programme, both for consumers and those involved with installations. The Programme is built upon an existing strong health and safety culture within the energy sector and will continue to strengthen the industry links to ensure the safety of customers in the future.

While identifying unsafe appliances or other electricity related issues is a positive, it is important that consumers receive appropriate support to enable them to rectify any safety issues which are identified. Citizens Advice research found that that the support given to consumers who were alerted to a safety issue with an appliance during their smart meter installation was not always consistent across the industry.¹¹⁷ Government is engaging with

¹¹⁷ Citizens Advice, Early consumer experience of smart meters (Citizens Advice, 2018): <https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/early-consumer-experiences-of-smart-meters-2018/>

Energy UK as they develop guidance with industry on processes to help ensure that consumers are given consistent support.

The data provided by smart meters is of great value to DNOs, enabling them to make better informed investment decisions and to provide an enhanced service to consumers. BEIS will continue to work alongside these companies to realise the full scale of benefits that have already been identified and to identify new opportunities to utilise the functionality and data provided by smart meters, ultimately delivering an enhanced service to consumers.

Chapter 8 - Innovation Enabled by Smart Meters

‘Smart metering will enable the energy industry to manage the generation and distribution system more cost effectively and will facilitate increased use of renewable energy. Time-of-use tariffs and other incentives to manage demand will help to reduce peak demand.....With an increasing proportion of consumers owning electric vehicles, there will be potential to charge these vehicles at home using smart meter controls that maximise the use of cheap, low-carbon electricity, or refuel at alternative charging points while paying for the electricity through the customer's energy bill’.

‘Subject to appropriate consumer permissions and protections, suppliers and others will be able to use consumption data to provide better energy efficiency products and advisory services, including automation of energy services to reduce costs and increase comfort and control.’

Smart Metering Prospectus 2010

Background

Smart meters play an important role in driving innovation in the energy sector. As a critical enabler of an accessible smart energy system, they will future proof our energy system by moving it into the digital age. A smarter, more flexible energy system could deliver cumulative benefits of up to £40bn over the next few decades.¹¹⁸ Smart meters generate large volumes of valuable consumption data and are thereby stimulating the development of a wide range of innovative technologies, subject to appropriate privacy safeguards.

This chapter outlines the progress that has already been made in this area and explores future market developments that appear to be emerging. It also describes government activities that are being undertaken to stimulate these developments and ensure that they deliver maximum benefits to consumers.

Progress to date

More than half of the 29 actions in the Smart Systems and Flexibility Plan have now been implemented and in October 2018 we published a Progress Update which identified our

¹¹⁸Carbon Trust and Imperial College, An analysis of Electricity Flexibility for Great Britain (BEIS, 2016) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/568982/An_analysis_of_electricity_flexibility_for_Great_Britain.pdf

priorities going forward and nine new actions. We are making progress against our remaining actions, including: ¹¹⁹

- market-wide half-hourly settlement¹²⁰, which will enable time of use tariffs and similar innovative products and services;
- technical standards¹²¹ for smart appliances and smart electric vehicle charge points, which will help provide market certainty and stimulate consumer demand;
- launching a Clean Growth Buildings Mission¹²² to halve the energy use of new buildings by 2030, while utilising the latest smart technologies; and
- more than £170 million of innovation funding for smart systems and £246 million for the Faraday Battery Challenge¹²³ has been made available.

With over 1 million smart meters now being installed every quarter, we are beginning to see a range of products and services emerging that make use of smart meter data to deliver a range of benefits to consumers.

The following section highlights developments in the main areas of innovation that smart meters are expected to enable.

Demand side response and smart tariffs

Demand side response enables consumers to engage more actively in the energy system, offering rewards to those who can be flexible in when and how they use energy, ultimately helping to balance supply and demand, while cutting costs and carbon emissions.

The 2019 Smart Meter Cost Benefit Analysis identifies around £1.4 billion of consumer benefits from shifting a proportion of demand away from peak to off-peak times, when energy is cheaper.¹²⁴ By providing consumers with a better understanding of the cost of energy,

¹¹⁹ The Smart Systems and Flexibility Plan published jointly with Ofgem and outlines 29 actions the government, Ofgem and industry will take to: remove barriers to smart technologies (such as storage); enable smart homes and businesses; and improve access to energy markets for new technologies and business models. These actions are designed to support clean growth, reduce the costs of the energy system and help keep energy bills low for consumers. See: BEIS, Upgrading our energy system: smart systems and flexibility plan (BEIS, 2017): <https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan>

¹²⁰ Ofgem, Electricity settlement: <https://www.ofgem.gov.uk/electricity/retail-market/market-review-and-reform/smarter-markets-programme/electricity-settlement>

¹²¹ For technical standards, see BSI, Smart appliances for flexible energy: <https://www.bsigroup.com/en-GB/smart-appliances-flexible-energy/>

¹²² See BEIS, Industrial Strategy: The Grand Challenge missions (BEIS, 2019): <https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/missions>

¹²³ See BEIS, Faraday battery challenge: Industrial Strategy Challenge Fund (BEIS, 2019): <https://www.gov.uk/government/collections/faraday-battery-challenge-industrial-strategy-challenge-fund>

¹²⁴ BEIS, Smart Metering Implementation Programme Cost Benefit Analysis (BEIS, 2019): <https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019>

supporting more cost-reflective tariffs, smart meters make it easier for customers to take advantage of rewards for shifting their energy consumption.

With consumers able to engage in demand side response simply by changing the time they turn on their washing machine or dishwasher, there is less need for specialist metering and control equipment. In UK Power Networks' 'energywise' critical peak rebate trial¹²⁵, prepayment consumers earned rebates ranging from £3 to £111 a year (£37 on average) by manually shifting their demand in response to price signal alerts. The offer reimbursed a customer the cost of 10 units of electricity for 1 unit saved during 'Bonus Time' periods.

By allowing electricity use to be recorded and billed in half-hour periods, smart meters unlock the possibility for half-hourly prices¹²⁶ to reflect the real price of electricity as it changes throughout the day, further developing the incentive framework for new products and services that encourage load shifting and use of electricity at times of the day when it is cheapest to supply. While these tariffs are in their infancy in the market, there appears to be appetite for them among consumers,¹²⁷ and the Department will continue to monitor their take-up through its benefits monitoring activities. In the future, smart time-of-use tariffs could be combined with smart household gadgets and appliances to automatically use energy when it's cheapest or greenest. Home energy solutions including roof-top solar, smart thermostats and battery storage could also be integrated enabling households to act as mini power stations.

Automated Load Control

As well as enabling a range of new tariffs, the smart metering system has also been designed to provide a secure and interoperable means of managing large domestic loads like storage heaters, batteries or heat pumps. These can be connected and controlled independently from a consumer's main supply. SMETS2 meters contain a switch (known as an Auxiliary Load Control Switch - ALCS) which can be configured to control the electricity supply to the devices connected to it on or off, or up or down based on an agreed switching pattern. This works in the same way as today's Economy 7 meters, providing a scheduled period of power to connected devices, but - subject to an agreement made between a supplier and consumer - could also support ad hoc commands allowing switches to respond to wider network conditions such as periods of excess renewable generation. Similar to an ALCS, a HAN connected auxiliary load control switch (HCALCS) allows large domestic loads, such as electric vehicles chargers, to be controlled independently of the main power supply. However rather than being

¹²⁵ UK Power Networks, Energywise (UK Power Networks, 2018):

<https://innovation.ukpowernetworks.co.uk/projects/energywise/>

¹²⁶ In Great Britain electricity is traded in a wholesale market, with generators and suppliers entering into contracts with each other for every half-hour of every day. Electricity suppliers are required to buy enough energy to meet their consumers' needs in each half-hour period; and 'settlement' is the process for determining, after the event whether what they bought matched what their customers consumed. Any shortfall or excess is charged or refunded to the supplier accordingly. It is distinct from an electricity supplier billing an individual customer for their energy use, even though both processes use consumption data.

¹²⁷ Smart Energy GB, The Smart Future, Lifestyle Tariffs (Smart Energy GB, 2018)

<https://www.smartenergygb.org/-/media/SmartEnergy/essential-documents/press-resources/Documents/The-smart-future---lifestyle-tariffs.ashx>

integrated with the meter directly, the switch is remotely connected via the Home Area Network. This provides more flexibility, avoiding the need for new wiring back to the meter when a new load is connected.

Electric vehicles

By 2030 the National Grid projects 11 million electric vehicles on the roads in Great Britain.¹²⁸ This could have significant implications for peak energy demand. Smart meters can enable new tariffs that incentivise use of energy at times when it is cheaper and lower carbon. New smart meter-enabled tariffs can reward consumers for charging their vehicles during off-peak times, such as at night, by passing on savings from energy used at lower price periods. This facilitates more renewable energy generation and supply without the need for costly infrastructure and investment.

As set out in the above section on automated load control, the smart metering system has been designed to provide a secure and interoperable means of managing demand such as electric vehicles in an automated manner – through the availability of remote load control functionality. With both tariff enablement and load control functionality, the Smart Metering system could be central to the effective integration of electric vehicles into a low carbon electricity system.¹²⁹

Trials are underway on charging electric vehicles through the smart metering system. These trials will demonstrate smart charging of electric vehicles using the smart metering system, to automate low-cost charging for consumers. Two consortia led by EDF Energy and EDM I Meters have been awarded a total of £2.7 million of innovation funding by BEIS to demonstrate smart charging of electric vehicles using the smart metering system. This will demonstrate the role the smart metering system can play in smart EV charging, which is a key facet to the Government's Road to Zero strategy¹³⁰ for decarbonising the road transport sector. Phase 1 of these trials ran from January to March 2019 and resulted in five feasibility studies to scope the high-level design. The strongest two were awarded contracts for Phase 2, which is now underway and will conclude on 31 March 2021. Phase 2 includes each consortium designing, building, and testing demand management devices. Each consortium will trial these devices in over 100 real homes.

Small-scale renewables

Not only do smart meters measure how much energy consumers use and when they use it, they can also measure how much is exported and when. Building on this functionality, half-hourly settlement provides commercial incentives for energy suppliers to offer tariffs that assist system optimisation.

¹²⁸ National Grid, Future Energy Scenarios (National Grid, July 2018): <http://fes.nationalgrid.com/media/1363/fes-interactive-version-final.pdf>

¹²⁹ University of Leeds, The Smart Route to Electric Vehicles (Smart Energy GB, May 2018): <https://www.smartenergygb.org/en/resources/press-centre/press-releases-folder/smart-route-to-electric-vehicles>

¹³⁰ Office for Low Emission Vehicles (OLEV, July 2018):

With the advent of smart meters and smart tariffs¹³¹, small-scale consumers could have greater autonomy over their electricity use, taking advantage of consuming or exporting at different times to either save or make them money. Stronger price signals and increased data transparency could also support new innovative markets for microgeneration to engage in demand side response and peer-to-peer trading.

Following consultation, in June 2019 government confirmed that a supplier-led mechanism, the Smart Export Guarantee (SEG), would be introduced from 1 January 2020 to remunerate small-scale low carbon generators for the electricity they export to the grid.¹³² The SEG places an obligation on most electricity suppliers to offer at least one export tariff, which will be the means through which the exported electricity will be bought and sold. Under the SEG all exported electricity will need to be metered and we expect that smart meters will provide the necessary functionality. We note that some respondents to the SEG consultation raised concerns that potential smart metering issues may impact on operability of the SEG; however, we consider any issues to be transitional and continue to engage with stakeholders to further accelerate solutions and build on this progress.

Products and services

Currently IHDs enable smart meter customers to receive near real-time feedback on their energy consumption. However, there is also the potential for consumers to grant access to their energy consumption data to third parties to receive new and innovative services. As well as being able to give permission to third parties to access their monthly, daily or half-hourly consumption data via the DCC, consumers can install a Consumer Access Device (CAD) in their home that can provide access to consumption data in even greater resolution. These devices can enable a wide range of other technologies that use consumers' smart meter data to provide energy management services.

The market has already begun to deliver a range of products and services that enable consumers to use their smart meter data to reduce costs, improve energy efficiency and increase comfort and control. Examples of this follow:

Smart meter advice project

The Energy Saving Trust's (EST) Smart Meter Advice Project¹³³ allows EST advisors to access household data to identify tailored, household-specific steps that can be taken to improve energy efficiency. Interviews and surveys with consumers involved in the pilot of this Programme found that it offered valuable insights into energy consumption behaviour that highlighted simple and tangible actions that could be taken to save money and reduce carbon emissions.

¹³¹ Smart time-of-use tariffs on the market today are focused on time of import but in the future they could relate to time of export.

¹³² BEIS, Consultation on the future for small-scale low-carbon generation (BEIS, 2019):

<https://www.gov.uk/government/consultations/the-future-for-small-scale-low-carbon-generation>

¹³³ EST, Smart Metering Advice Project (SMAP): <https://business.energysavingtrust.org.uk/case-study/smart-metering-advice-project>

Energy consumption analytics

Services which use smart meter data to provide personalised advice on energy efficiency are emerging in the market. Research carried out by Delta-EE estimated that households could save over £100 per year by responding to feedback on their energy use. Smart meter enabled products and services can assist with this in a range of ways, including disaggregating feedback to an appliance level, providing alerts and using gamification techniques¹³⁴. For example, British Gas' 'My Energy' service uses consumers' smart meter data to provide detailed analytics about energy consumption, such as daily or monthly costs and comparisons to their historical average.

Assisted living

Smart meters also have the potential to support the development of new products and services outside of the energy sector such as digital healthcare products that enable those with long term conditions to stay at home longer.¹³⁵

With consumer consent, data from smart meters can be used to identify energy usage patterns that could be associated with health conditions such as dementia or depression. By creating a view of a person's daily habits, unusual behaviour can be detected and a patient's carer or the NHS can be notified that intervention may be required. It could also be used as a clinical decision support tool. For example, if a patient is at home and the technology detects that the patient is getting up in the night a lot, it could lead to a health professional reviewing whether someone's medication is right or suitable.

Liverpool John Moores University and Mersey Care NHS Foundation Trust are planning to run a clinical trial which could help patients to live more safely at home. Fifty patients will take part in the study which uses smart meter and AI technology to map their movements at home and flag when something unusual or outside someone's daily routine happens. The research aims to facilitate clinical decision support in monitoring dementia progression. The goal is to enable patients to live more safely at home; providing greater peace of mind to patients and their care network.

For more examples of how smart meters are enabling a smarter, more flexible energy system with better products and services for consumers see our recent Smart Meters: Unlocking the Future publication.¹³⁶

¹³⁴ Delta-EE, Cost savings households could make within a smart energy future (Smart Energy GB, 2019): <https://www.smartenergygb.org/en/resources/press-centre/press-releases-folder/delta-ee-cost-savings>

¹³⁵ See UCL Energy Institute, Energising Health (Smart Energy GB, 2017): <https://www.smartenergygb.org/-/media/SmartEnergy/resource-centre/elected-representatives/documents/elected-representatives/Energising-health-final-report---Report.ashx> and Sustainability First, Project Inspire (Sustainability First, 2018): <https://www.sustainabilityfirst.org.uk/inspire>

¹³⁶ BEIS, Smart Meters: Unlocking the Future (BEIS, 2018): <https://www.gov.uk/government/publications/smart-meters-unlocking-the-future>



Case Study - Iain, Edinburgh



Iain uses his smart meter to see how much his electric car is costing him to use. Since getting an electric car, Iain has found that his EV costs him a fraction of what he used to spend on fuel – in his opinion, there just isn't a downside.

I had my smart meter installed around two years ago, and my direct debit has gone down every year since. Having accurate bills from my smart meter has shown that I was actually overpaying on my gas and electricity, without me even realising. I haven't made any huge changes to cut down on my bills, but when you see the light change from green to red on your in-home display, and you notice you're using a bit more energy, it does draw your attention to it and makes you think – can I change that?

I got my electric car about a month ago and I'm absolutely loving it. I have a charging point at home, so when I'm not charging out and about I can top up overnight. It usually takes about 4-5 hours to fully charge the car, which sounds like a lot, but on my smart meter display I can see that this costs me no more than £4 or £5 in electricity. One full charge will then last me around a week to ten days, so my fuel costs have absolutely plummeted.

When I decided to make the move to an electric car, I did a lot of research into which vehicle to buy, but I also looked into the best charging points to have installed in my home. In the end, I went for an EV charger that also works with solar and wind power. I don't have my own source of solar power yet but it's definitely something I'd look into doing in the future. Imagine driving for free from electricity you've generated from your own solar panels – that just sounds phenomenal to me!

I'm also interested in finding out more about time-of-use tariffs, which I've heard you can get with a smart meter. If you're charging your vehicle at home, you can programme it to charge when power is cheapest, which sounds like a no-brainer to me.

"I'm also interested in finding out more about time-of-use tariffs, which I've heard you can get with a smart meter. If you're charging your vehicle at home, you can programme it to charge when power is cheapest, which sounds like a no-brainer to me."

Case Study provided by Smart Energy GB

Future direction

Interest in the opportunities offered by smart metering data continue to grow. As the roll-out of SMETS2 meters continues to ramp-up and SMETS1 meters are enrolled into the DCC, we expect interest in the opportunities offered by direct access to energy consumption data to grow, as commercial incentives to develop new products and services become more favourable.

Smart metering data has the potential to improve the quality and granularity of consumption data available for research purposes and a work programme is underway, led jointly by Sustainability First and Centre for Sustainable Energy, to investigate how smart meter energy data could support the public interest agenda.¹³⁷ The Smart Energy Research Lab (SERL), led by UCL, also intends to harness smart metering data to support research activity, with consumer consent.¹³⁸ Analysis of energy consumption data could enable the development of new public services, aid planning decisions and promote targeted intervention. This is an area of ongoing interest and the Department is working with SERL to support further development.

A wide range of smart-enabled energy saving products and services are already available on the market and government is committed to financing further innovation in this area to incentivise and enable continuing progress for the benefit of consumers. BEIS will continue to monitor and where appropriate, support these developments through ongoing research and innovation-friendly policies to ensure that smart meters continue to deliver their intended benefits for consumers.

Promoting the development of smart meter-enabled energy saving products and services is vital to meeting government's pledges under the Clean Growth Strategy¹³⁹, which commits government to:

- trial the provision of regular information about their energy use to encourage long-term energy savings; and
- explore how the data available through the national smart metering platform can, with consumers' consent, support personalised recommendations for saving energy, more targeted policy interventions and help businesses develop energy saving offers.

To meet these commitments, BEIS has launched the Smart Energy Savings (SENS)¹⁴⁰ and Smart Meter Enabled Thermal Efficiency Ratings (SMETER) Innovation Competitions.¹⁴¹

SENS will offer grant funding of £6.25 million to support the development and trialling of innovative smart meter enabled products and services for households. The research insights gained through the trials conducted as part of this competition will shed light on the potential for products that can deliver even more energy savings. This is likely to increase the commercial appeal of effective products, prompting further market expansion while gathering crucial evidence on this new and emerging form of domestic technology.

It is BEIS' vision that the SENS competition will:

¹³⁷ See CSE, Smart Meter Energy Data Public Interest Advisory Group (PIAG):

<https://www.cse.org.uk/projects/view/1351>

¹³⁸ See UCL Energy Institute, Smart Energy Research Lab (SERL): <https://www.ucl.ac.uk/bartlett/energy/smart-meter-research-portal-smrp>

¹³⁹ BEIS, Clean Growth Strategy (BEIS, 2018):

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf

¹⁴⁰ BEIS, Smart Energy Savings Innovation Competition (BEIS, 2019):

<https://www.gov.uk/government/publications/smart-energy-savings-sens-competition>

¹⁴¹ BEIS, Smart Meter Enabled Thermal Energy Ratings (BEIS, 2018): <https://www.gov.uk/guidance/innovations-in-the-built-environment#smart-meter-enabled-thermal-efficiency-ratings-smeter-innovation-programme>

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- identify innovative products and services using smart meter data that can deliver energy savings, in excess of those currently identified in the smart meter impact assessment, for either the GB population or specific groups;
 - ensure that solutions are attractive and valued by those who would use them and easily available (using either existing technologies and delivery channels or cost-effective new hardware); and
 - support the development of a market for energy products and services, securing investment from technology providers, energy suppliers and third parties.

The SENS competition launched in February 2019 and is in the process of awarding grants to up to eight applicants. The Department will work with these applicants to fully evaluate potential impacts (including on energy consumption) and develop evidence to inform consideration of future policy in this area.

The SMETER competition was launched in September 2018 and is supporting (through £5m of funding) the development of new technologies that use energy consumption data from smart meters, in combination with other data, to make assessing the performance of homes easier and more accurate. Improved measurement tools and techniques will benefit a wide range of stakeholders, including households through energy efficiency advice and recommendations that are tailored to their home and policymakers who will be able to more accurately target and assess policy interventions.

This publication is available from: www.gov.uk/government/publications/smart-meters-progress-on-realising-benefits-for-consumers

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